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Apple sets big Mac on IBM

by Robert Parry

APPLE is back in the battle for office micros. Tuesday saw the launch of the eagerly-awaired Macintosh, plus a revamp of Lisa at just over half its present price.

With Macintosh, Apple is out to claw back from IBM the pole position among micro makers. It is banking on applications software already selling fast on the IBM-PC to boost the hardware which, like Lisa, breaks the IBM-PC mould.

Microsoft's Multiplan spreadsheet is already available in a version tailored to fit the Macintosh environment, and Lotus's 1-2-3 is imminent.

Macintosh hardware, as expected from the persistent leaks from the 100 or so software houses that have been playing with Macintosh over the past year, is very much along the ssme lines as Lisa, but a lot cheaper.

It is built around a single 50-chip logic board carrying the 68000 processor, 128K of RAM snd 64K of ROM holding the operating system, graphica subsystem and toolbox softwsre to tie in applications.

Like Lisa, it has a high resolution black and white screen — nine inches diagonal on Mac rather than Lisa's 12-inch screen — to give the graphic desktop display. Mass storage comes from a single in-built floppy drive, a 3½-inch unit modified by Sony to Apple's specification. By running it at a variable speed, 400 Kbytes can be fitted on to standard Sony-style bard-jacketed media.

These are boxed in a tall unit — to save on desk space — which with the keyboard and mouse weighs 20lb, well in the "transportable" weight range.

A link box to IBM network controllers, to be called AppleLine, will be available soon.

Application writers have around 500 calls into the toolbox firmware to integrate packages into s standard Macintosh environment. Apple is using a carrot rather than a stick to get them to write application packages in the stsndard wsy, says chairman Steve Jobs, who believes people are rejoicing in using the toolbox and "connecting the dots in the ROM".

Language dependence in applications is kept apart, allowing easy translation of packages for different national markets.

With the operating systems software and, for the first three months at least, the word processing MacWrite and graphica MacPaint packages thrown in, Macintosh will sell for $2,495. The UK price is not yet fixed, and will depend on the dollsr rste when shipments start.

Three new Lisa models are set to arrive in the UK before Macintosh, which sits at the bottom end of a four-machine Apple 32 System line. A stripped down Lisa 2, with 512K of RAM and no Winchester disc costs $3,500.

A five Mbyte version, a direct replacement for the now defunct original Lisa, which sells for $8,200 in the US, costs $4,500, and a 10 Mbyte internal Winchester machine will sell for $5,500. UK shipments should start next month.

Like Macintosh, all the Lisa 2s have a single inbuilt modified Sony microfloppy, now the exclusive transfer medium among the 32 system family.

Software is upwards compatible, so Macintosh applications will run on Lisa 2, exploiting the extra memory available.

Mackintosh will be sold through all authorised Apple dealers.

BAKER . . . His comments seem to leave Butcher on a limb . . .

Baker corrects Butcher's view

by John Kavanagh

THE UK is facing up to the problems of moving from the older industries to the new with greater realism than at any time since the war, said Information Technology Minister Kenneth Baker last week.

Delivering the London Business School's Stockton lecture, he said these new technology industries would provide the main source of growth and new jobs over the next 25 years. Baker repeated the government's view that most of these jobs would be in service industries. But this time there was also a good word for manufacturing.

"It would be very easy to write-off manufacturing," he said. "But it is impossible to envisage the British economy without s large element of manufacturing employment. There is growing evidence that as we pull out of the recession, manufacturing companies will share in the recovery."

Computers would not only increase the number of jobs in certain fields; they would also increase the number of occupations. There would be a great need for training and re-training as the UK went through this "deep structural change" — but this change was vital if the new sources of national wealth were to emerge. The change would bring more leisure time and demand new social patterns.

Baker's comments, which reflect government policy, seem to leave industry under-secretary John Butcher out on a limb. Earlier this month Butcher told his local Coventry constituency that it was "foolish and midguided" to talk about information technology as the panacea for industry and heralding an age of leisure.

Butcher said that information technology would not change working patterns; indeed, 1984 would be a year of growing overtime.

■ The UK is now Europe's biggest consumer of integrated circuits, which means more sophisticated equipment is made here than anywhere else in Europe, said Kenneth Baker when he opened Ferranti Electronics' new factory in Oldham, Lancashire, last week.

BUTCHER . . . "Misguided."

Burroughs replaces B6900 mainframe line

by Dave Madden

BURROUGHS yesterday announced a replacement for its B6900 mainframe line.

The machine, called the A9, uses emitter-coupled-logic (ECL) technology. Burroughs rates the machine at three mips, and says that the A9 takes only half the power space and cooling of the current 1.5 mips B6900, which will be phased out this quarter.

The A9 family comes in three models: B, D and F. An entry model A9B will cost $350,000 for the central processor and has six Mbytes memory — twice the power of a B6900 for one and a half times the price.

At the top end, a 12 Mbyte A9F will cost around $600,000. Main memory can be expanded to 24 Mbytes in increments of 6 Mbytes at $60,000 per time.

The A9F will be available in the UK in the second half of 1984, the models B and D in 1985.

Burroughs is reported to be getting its ECL gate arrays from Hitachi and Fairchild. As well as dropping conventional TTL technology the A9 is understood to use a new internal architecture which gives a significant increase in throughput.

Polls aid is all in family

by John Kavanagh

A NEW software firm with a nine-year-old trainee programmer and a prospective company secretary aged five has claimed a UK first with its inaugural product.

CT Software (Wokingham) has launched an £11 package called Electronic Polling Day, which helps political parties ensure that all their supporters turn out to vote. The first order has come from the Wokingham Liberals in Berkshire and there has been "lots of interest countrywide", according to a company spokesman.

CT Software was formed by Norman Collins-Tooth, who works in training for a UK computer firm. His wife, Margaret, a former programmer at UK firm Business Computers, is managing director.

Their children, Christopher and Nichola, are listed as the other joint proprietors.

"We bought Christopher an Oric microcomputer last summer and he's very interested," says Margaret Collins-Tooth. "He has learnt Basic programming at home. Nichola wants to be the company secretary but her typing's not up to scratch yet.

"We want to involve the children. Their views on what we are doing could be a great help."

Norman Collins-Tooth, a member of the local Liberals, developed the package for the Oric, Sinclair Spectrum and BBC computers.

Canvassing returns are entered so all potential supporters' votes are stored. On polling day, poll numbers can be entered as people vote. The system can then produce lists of supporters who have not voted so party members can go and remind them or offer them lifts to the polling stations.

The package can also display the likely result of the election using the canvass returns or the poll numbers of those who have voted so far.

Margaret Collins-Tooth says she knows of no competitive package.

Trilogy super computer suffers setback

by Dave Madden

TRILOGY has run into trouble in the development of its new circuit technology which will delay the introduction of its supercomputer.

The company has announced that the final metalisation layer on the first prototypes of its "wafer-scale" semiconductors is overheating and shorting. It said that this will put back first shipments of the Trilogy machine from the summer to the fourth quarter of 1985.

A spokesman said last week: "We had hoped the layer would function properly, but the problem is not insurmountable." A revised metalisation phase will be implemented within a month, and Trilogy should know if it has worked by the end of March.

The news will be a blow to DEC, which intends to use Trilogy's technology as the basis of a new generation of Vax machine.

Prototyping set-backs appeared inevitable given the nature of the circuit integration that Trilogy is attempting to get from its 2½-inch devices.

But the delay does emphasise the risk that investors in Trilogy have taken. Trilogy's plans, and Gene Amdahl's reputation, have attracted more than $100 million. Sperry bought a 15% stake in the company, and an option on its technology for $42 million, while DEC is in for 9% and a similar option, for $26 million.

AMDAHL . . . Attracted $100m.

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Tebbit prepares to meet IBM president Opel

by George Black

SECRETARY of State Norman Tebbit will meet IBM president and chief executive officer John Opel in New York next Friday to discuss its trading policy with the UK.

It is virtually certain that he will protest to Opel about IBM's recent letter to UK customers on their obligation to notify the American authorities of movements of their machines between end-users.

But trade officials in London stressed that the meeting had been arranged before the IBM letter fuelled the extra-territoriality dispute.

They said it was regular practice for secretaries of state visiting the US to contact the corporate headquarters of major investors in the UK.

On the same day Tebbit will meet the chairman of the New York Stock Exchange, William Batten, and other leading industrialists.

In a five-day visit he will have talks with US Commerce Secretary Malcolm Baldrige in Washington which will cover the new US Export Administration Act. He is also likely to seek support from a number of officials, senators and congressmen for the British case against a clampdown in technology trade.

The Defence Department has been pressing for much tighter controls to be implemented in the new Act.

Tebbit will be addressing the US Chamber of Commerce, the Washington Export Council and the British-American Chamber of Commerce with speeches which will sum up the British computer community's case for free and fair trading conditions.

In the spring Tebbit is expected to go to California in a bid to strengthen trade links with Los Angeles and San Francisco — but it is not yet known if he will visit Silicon Valley.

When he called at the American Embassy in London last week to outline his intentions, Tebbit is said to have played down the technology trade issue and indicated that other issues such as steel were more on his mind.

But he will be keen to take the chance for a strong representation on the new Export Act, as it has been laid open for public comment until the middle of February.

Liberal industry spokesman Paddy Ashdown has told Tebbit that Britain should be prepared to act unilaterally if he does not get agreement on reform of the arrangements between the US and UK.

Ashdown has renewed his request to Tebbit for a Commons debate on the status of COCOM, the NATO co-ordinating committee on trade policy.

"COCOM has a useful function to perform, but it is being manipulated by the Americans and this has never been debated in the Commons. We are inhibited from trade with China, while the Americans are doing so outside COCOM. We must be prepared to act outside COCOM too if necessary."

US banks go for Chaps clearing

THE two largest US banks, Citibank and Bank of America, will take part in the electronic clearing system, Chaps, due to be launched by British clearing banks on February 9. The decision contradicts advice from the American Bank's Association of London.

Cobol in decline

THE decline of the Cobol language may have started, according to the *Computer Weekly*/Datapro user satisfaction survey published this week (pages 16-17). Results of the survey, based on over 1,000 user responses, suggests that fewer users program in RPG, but that Basic, Assembler, PL/1 and Fortran are more frequently used than last year.

Bell to lecture

GORDON Bell, the man behind the design of many of Digital Equipment's most successful minicomputers, will give the second BCS Jubilee Lecture, which is sponsored by *Computer Weekly*. Bell, who joined Encore Computer Corp in July 1983 as chief technical officer, will talk on computer evolution. His lecture will take place on Wednesday, March 14, at the Royal Society, London.

BELL . . . To give lecture.

O'CONNOR . . . "There will be less red tape."

ICL users demand price lucidity

by John Riley

ICL USERS are demanding a clarification from ICL on the way it is pushing through its latest round of software service and licence price increases.

Chairman of the ICL User Group, John Atkin, says that "ICL's announcement is vague, and the way of working out the amount payable is complicated; I don't understand how the prices are being worked out".

ICL's announcement of the price changes was made in December, but many users still do not know how they will be affected.

The most complicated area concerns 2900 users, where software service and licence increases and hardware maintenance costs decrease vary from product to product.

ICL said last December that salesmen would visit each 2900 VME installation and work out the new charges on site. However, they have been late doing that, and users are getting impatient.

For users other than 2900 users, ICL announced that it was making a 10% increase in software service charges. That announcement has annoyed System 10 and System 25 users, who had a 5% increase in software charges last summer.

In addition, ICL has made special deals available to users of the ageing 2903 and 2904 machines, as well as the System 10, as well as 120 and 220 users, where maintenance charges are pegged for the processors alone, as long as users take out two year contracts. These machines are also those most widely serviced by Third Party Maintenance Companies (TPMs).

Atkin says that "ICL should have sent a salesman round to every user as promised before Christmas but that didn't happen. What I'm afraid of is that the first users are going to know about the increases is when they get their quarterly bill at the end of February. By then it will be too late.

"Some people will be horrified and some will be relieved. I see increases overall ranging from 0 to 30%, with in some cases, even decreased bills," he adds.

The third party maintenance companies believe that the charges are aimed at them in part. Keith Meadows, managing director of the prominent DPCE Holdings, recently made a submission to the Office of Fair Trading on manufacturers' attitudes to third parties. He says: "I would see this as partly directed against third parties."

Bryan Parlett, chairman of ICL's Large Systems User Group understands the rationale behind a 2900 software price increase — "we haven't had an increase in three years," but was disappointed with the delay in getting details sorted out on individual sites.

CCTA promises autonomy

by John Riley

THE newly installed head of the CCTA's office automation division has promised more autonomy to local managers in deciding which equipment they buy.

Michael O'Connor, whose move to the Central Computer and Telecommunications Agency (CCTA) was announced this week, also says that there will be less red tape when the public sector buys office automation systems in the future.

"There will be a progressive shift of responsibility from the centre to the departments so that when buying office automation systems local managers will make their own decisions," O'Connor says.

"The CCTA is the government's own information technology advisor, and is, says O'Connor, encouraging devolution of responsibility in line with the wider government Financial Management Initiative programme.

However, the transfer of responsibility away from the centre does not mean that the CCTA will collapse.

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Second magazine makes Acorn see red

by John Kavanagh

A SECOND magazine is in trouble with UK microcomputer firm Acorn Computers for showing how to copy programs from cassette tape to disc. But this time there is an extra twist, for the magazine, *Acorn User*, is being taken over by a publishing company part-owned by Acorn founder Chris Curry.

In December Acorn took *Personal Computer World* to the High Court to prevent it publishing a similar article. The magazine paid £65,000 in an out-of-court settlement and was then able to sell the issue.

But *Acorn User* had already been distributed before Acorn heard of its article.

"It was too late for us to do anything about it," says David Johnson-Davis, managing director of Acorn's Acornsoft software subsidiary. "We are understandably upset about it. We have consulted our solicitors and we are now thinking about what to do."

These articles have appeared just as Acornsoft has introduced an offer to take back cassette versions of its programs in exchange for half-price disc versions.

The magazines point out that details of how to make the copies were already on the Micronet 800 software and information service, available through the national Prestel viewdata network.

Curry's new publishing firm, Redwood Publishing, has been set up with former *Daily Express* editor, Christopher Ward. It expects to have 10 journals by the end of the year.

Johnson-Davis says Curry's investment will not affect any Acorn action against *Acorn User*. And *Acorn User* editor Tony Quinn says Acorn will have no influence over the magazine.

NIXON . . . *"It is IBM's concern to play a closer role in higher education."*

IBM aims to flood the schools

by Philip Hunter

IBM UK has launched a multi-million pound programme to spread its name and computers through British schools and colleges, and IBM Europe is set to give away 1,300 Personal Computers to educational establishments.

IBM UK chairman, Sir Eddie Nixon, last week committed the company to a £3.2 million programme to help schools and universities develop computer-aided education, with further announcements expected to bring the investment up to at least £10 million over the next four years.

The main part of the initial programme is a £2 million joint project with Cambridge University's engineering department, to bring computers into the lecture theatre for applications like electronics black board and animation.

IBM is investing £2 million in this project over three years. It will spend £400,000 more giving away 92 Personal Computers to 67 selected colleges and polytechnics, plus a further £800,000 sponsoring projects involving the PC in schools.

The Cambridge University project is the first under IBM's recently announced "IBM Institute" programme and Nixon says that more such collaborative ventures will follow.

"It is IBM's concern to play a closer role in higher education," he says. But it is clear that the strategy is part of a worldwide programme to make students familiar with IBM hardware, and therefore more likely to continue as IBM users afterwards. Cambridge University is already a big IBM mainframe user.

Other major computer-makers have recently moved to increase their share of the education market by announcing price cuts or giving away software. Apple and Commodore recently announced price cuts of around 30% to schools, while Research Machines is giving away around £2,000 worth of software to schools buying its network system.

Apple UK says it is considering a plan along similar lines to IBM's to establish itself in universities. "We would leave the application area open to universities and perhaps offer a discount on our hardware," says a spokesman.

Apple's Lisa and Macintosh computers would be involved in the scheme, rather than the ageing Apple II, 2,000 to 3,000 of which have already been supplied in UK schools and colleges.

ICL has no scheme to collaborate directly with universities in development of computer-based course material, but for several years has been supporting individual research projects through its University Research Council. Like its competitors, the company is looking at ways of getting more computers into colleges, but has lost interest in the schools market.

ICL recently sold to Acorn a subsidiary that specialised in education software for schools.

Lords speed through Cable Bill amendments

by our Parliamentary Correspondent

THE Lords have made a quick start to the committee stage of the Cable and Broadcasting Bill, getting through amendments to the first eight clauses in the first sitting.

But peers admitted that they did not understand many of the technical issues involved, and that parliament was really legislating, if not in the dark, then at least in the twilight.

Noble Lords confessed that they had very little knowledge of how cable operators would carry out their tasks. But Lord Elton, Under Secretary at the Home Office, said it was already clear that few programmes would be originated by the cable operators themselves. Programme services would be offered to cable operators on a national scale by a number of new companies or consortia, he said.

An indication of those companies which had banded together could be gained from the published list of 10 or 11 pilot projects approved in December 1983.

Elton gave Lord Aylestone a pleasant surprise by accepting his amendment to limit the size of the Cable Authority to no more than 10 members. Elton said that the Home Secretary had intended from the start to have just a chairman, deputy and five others.

Elton explained that only services broadly comparable with broadcast TV and radio would need a licence from the cable authority. Other services, closer to printed publishing than to television, like Prestel for example, would need no licence.

But they would still be covered by the general laws on obscenity and libel.

Elton described the idea of licensing printed newspapers as Orwellian, and said that it would be inconsistent to compel operators offering only electronic news to have a licence, and not newspapers.

The Lords was also at committee stage on the Telecommunications Bill. Opposition peer, Lord Bruce of Donnington, is trying to introduce a new clause to the Bill to provide for the setting up of a Telecommunications Council for referral of disputes arising from decisions taken by the Director of Telecommunications.

Pick gets a European boost

by George Black

THE Pick operating system is to get a European boost as a result of a $28.8 million deal between French hardware maker Bull and the US Ultimate Corporation.

In the past Ultimate has bought the hardware for its turnkey Pick-based system from Honeywell in the US, which has caused some difficulties with local support. But now Ultimate has signed its first contract with the Paris group for the supply of minicomputers over the next four years.

The move follows the ending of an exclusive licence from author Dick Pick to French systems house Intertechnique to handle his software. The French company had made little impact on the Continent with Pick. Until now Ultimate has sold only about half a dozen systems in Europe. But now there are plans to set up European distribution channels, beginning in Scandinavia.

The hardware will be maintained by Bull and the software by Ultimate's UK distributor, Universal Computers (UCL), of London.

UCL managing director Nick Drescher says it is logical to start the expansion through Scandinavia, where the Microdata Reality machine is already strong.

McDonnell Douglas's subsidiary, Microdata (formerly CMC), runs Pick on its Reality system and had tried to prevent it being spread by its author on to other machines. But the attempt failed and the operating system was later made available on the Honeywell DPS6/Level 6 hardware adopted by Ultimate. Drescher himself is an ex-Microdata employee.

Prime buys IBM-like plans and sits on them

by Keith Holder

MINI-MARKET Prime has bought IBM compatible hardware designs but claims to have no plans to use them.

The company has made a $200,000 non-exclusive deal with stricken US micro manufacturer Computer Devices for its designs for an IBM-PC lookalike.

A spokesman for Prime says that there are no plans to use the technology for any particular product at present. He adds: "We simply felt it was an excellent opportunity to acquire good technology at a very good price, and we acted on that."

The deal covers mother board and RAM designs and ROM source code. It includes a 5¼in floppy disc drive adaptor, which Computer Devices recently developed in a bid to make its micros compatible with off-the-shelf IBM-PC software diskettes.

The company filed for protection under Chapter 11 in the US court, and backing was withdrawn before the product could be brought to market.

According to Computer Devices' president, Robert Moore, the deal with Prime is part of a company plan to license technology used on its machines.

The deal authorises Prime to use or sub-contract the use of the designs.

Although Prime has denied any intention to use the Computer Devices designs to develop its own IBM compatible micro, Steven Seltzer, the company's group manager for workstations, says that the company regards the technology as very important, and will pursue it vigorously.

Apple/Lisa

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LAWS . . . *"Part of our strategy for acquiring product lines."*

Bristol opts out of software centre

by John Riley

BRISTOL University plans to opt out of the South West Universities Regional Computing Centre (SWURCC) at Bath, a major UK software and networking development centre. But it could miss out on government cash in the future.

Bristol has approached the Computer Board, which finances university and regional computer centres, about splitting off from the twin ICL 2980 mainframe facilities it shares at the independent centre with four other universities.

However, a questionmark hangs over what Bristol stands to gain by the move, as there is not enough cash in the kitty to boost its own local facilities. The situation also raises fresh fears about the long term future of SWURCC itself.

Last year SWURCC came under close scrutiny by a committee set up by the Computer Board, headed by Geoff Manning, director of the Rutherford-Appleton laboratory. The resulting internal report recommended that SWURCC should keep going but that it would have to lose staff.

The Manning report also dashed any hopes that SWURCC may have had about becoming a national computing centre like the two at Manchester and London. But it recommended that SWURCC should get £6 million from the Computer Board over the next 10 years.

SWURCC has many tie-ups with industry for contract research work. It was a pioneer in packet-switched networks and is currently working on several development projects for ICL, including building the Unix operating system into a VME environment.

Bristol is cagey about its reasons for wanting to leave SWURCC. "We've had a good service from it," says Alan Grant, head of Bristol University's computer centre, "and we wouldn't want to imply that we're unhappy with it. But our decision is linked to where we go in the future."

Grant, while not wishing to comment further, adds that Bristol does not make as much use of SWURCC as it used to. Bristol currently has links with the London University Computer Centre, which has a Cray 1 supercomputer.

However, if Bristol hopes to get a cut out of the grant allocated to the south-west region to compensate it may be disappointed, as the Computer Board is strapped for cash at present.

"If Bristol were to withdraw in 1986, it would want finance to improve local facilities," says Computer Board secretary Edwin Herbert. "The Computer Board would consider it as a local case, but the demands on the capital budget are very tight.

"It costs as much to keep open a regional centre for four users as for five," he adds.

Amdahl boosts its mainframes

PLUG compatible manufacturer Amdahl has introduced a device which, it claims, boosts the processor performance of its 580 large scale mainframes by up to 35%.

Called an accelerator, it is designed to let users upgrade their systems temporarily to cope with peak loads or provide back-up. The company says that it is unique, and can save users the expense of installing additional CPUs, which may only be needed on rare occasions.

Tony Whalley, Amdahl's services manager, explains that the device works by using software techniques to modify pipeline operations, and achieve optimal processor performance.

It will allow a model 5840 to reach the performance of the next machine up in the range.

The accelerator is activated or turned off by single console commands. It was originally pioneered on the company's 470 series.

Users cannot use the device as a permanent upgrade because of an hourly charge for its use, which makes it prohibitively expensive, says Whalley.

Welsh sell US arm to terminal maker

by John Riley

APPLIED Digital Data Systems (ADDS), a leading US terminal manufacturer, last week bought Welsh company Data Type Terminals' US operation for $700,000 and royalties.

ADDS will now manufacture and market Data Type's Autograph X-Series of Televideo and Tektronix compatible graphics terminals in the US. This will give ADDS the product it needs to take on its arch-rival, terminal maker Televideo.

"We have closed our US operation, transferred the staff to ADDS, and passed on our complete distributor network for the X-Series," confirms Gerry Tuffs, chairman of Cwmbran-based Data Type. The company has been selling 40 to 50 terminals to the US each month, but expects to gain from ADDS' sophisticated mass production facilities.

"Data Type gets $700,000 as a lump sum and a royalty on each machine sold," adds Tuffs. "We have plans to develop jointly one and probably two new products based on Data Type's graphics expertise and ADDS product engineering."

However, Tuffs has not closed all his options in the US. He intends to continue to market an option board for Televideo graphics through a separate distribution network. Data Type will still manufacture terminals at Cwmbran for the UK market, which takes about 100 terminals a month. Ironically, the UK company is also Televideo's largest distributor in the UK.

David Laws, ADDS president and chief executive, says: "This is part of our strategy for acquiring product lines developed by others as technical platforms. We are looking for companies with good products, but which are faltering because of poor marketing."

Laws is using that strategy to expand into all sectors of the terminal market. Until now, ADDS, a wholly-owned subsidiary of NCR, has produced terminals using only teletype protocols. It recently moved towards the IBM 3270 compatible market with Viewpoint 78, which uses a separate converter.

Magnuson comes back from the brink

by John Kavanagh

US MANUFACTURER Magnuson Computers has come back from the edge of bankruptcy and is ready to start full trading in the IBM compatible processor market again. And one of its mainstay customers will be the huge US peripherals firm, Storage Technology, which has great ambitions in the packaged systems market following its $12 million takeover of Global Software last month.

Magnuson was formed in 1977 to make and sell rivals to IBM's 4300 medium-sized mainframes. In 1981 there were takeover talks with Storage Technology and then National Advanced Systems, but they came to nothing.

Last March Magnuson filed for protection from its creditors under US bankruptcy rules. The previous year it made a loss of $21.6 million on sales of only $18.4 million.

Magnuson was allowed to continue trading last year while sorting itself out — and Storage Technology became a big customer. In nine months the company's new Ultimacc systems division sold 30 hardware systems based on its own peripherals and Magnuson processors.

Meanwhile Ultimacc was also selling distribution industry software on Digital Equipment minicomputers. And its success in the IBM compatible processor market led it into the IBM software business — which brought the takeover of Global Software. Global specialises in general accounting packages and competes with big firms like Management Science America and McCormack and Dodge.

Ultimacc had sales of $14 million in 1983 — including $5.2 million worth of Magnuson processors and Storage Technology peripherals. This year it expects to more than double that to $31 million, with $8.6 million worth of hardware.

"We are getting substantial development funds," says George Pilmania, head of Ultimacc. "And we're looking for more products. We want to expand all sides of our business into Europe."

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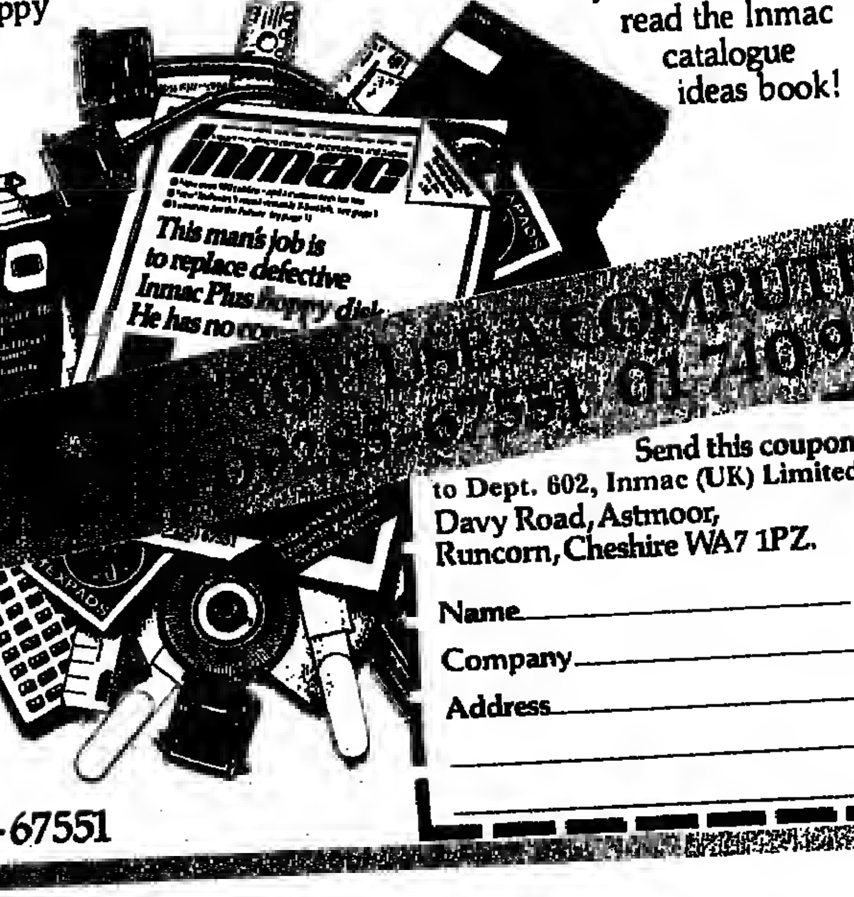

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Software house banks on a first

by Donald Kennett

US-BASED banking software house Hogan Systems believes it has the first system that can give international bankers a global picture of their operations. But UK-based software firms have dismissed Hogan's claims.

The company acquired the system in December by buying its designer, New York-based Henco Research. It launched it in the UK last week, because it regards London as the world centre of international banking.

Hogan's director of European operations, Rich Warren, says: "We think we're first. Banks have got to know how much they have got and what their exposure is at any given time. And we are the only company that can offer a global picture of their position."

The UK banking software market is currently dominated by Arbat, Hoskyns and BIS. But Hogan believes its rivals' products are getting old and have the disadvantages of being based on smaller machines and of not having integrated foreign exchange, loans and accounting applications.

The three firms listed by Hogan scoff at these claims. "A lot of firms have come to the City roaring like a lion and later gone on like a limb," says John Wills, marketing manager at BIS Software.

"We have 280 staff in London alone; Hogan has 20. Our Midas system has been around for some time, but it's constantly updated. We've announced three new modules in the last six months."

The UK-based firms use Digital Equipment computers and the IBM Systems 34, 36 and 38. They say they use this size of equipment because this is where demand is.

Hogan's IBM/S runs on IBM mainframes from the 4300 upwards, under MVS and DOS/VSE, using the CICS teleprocessing monitor and IMS, DL/I or IDMS database management systems. It is designed to accept input online from bank branches and to provide online analysis of level of activity, exposure and profitability by customer, branch and product.

Its advantages are claimed to include control in a changing business environment and increased productivity by eliminating the need for manual consolidation of separately produced figures.

Warren says: "Institutions can't bring their own resources to bear on producing this kind of system for themselves – they've got to buy it in. There seems to be a thirst for this kind of product in Europe."

Hogan Systems was formed in 1977 and set up its UK subsidiary last April. It was looking for a UK distributor when Warren persuaded its management to set up a subsidiary instead.

Warren was European sales and marketing manager for Cincom and he contacted Hogan while looking for systems that Cincom's Total database management system could be interfaced to.

Warren says: "Software companies basically sell a bag of wind for a lot of money, so the quality of their people is vital. We try to hire the best we can, and our staff turnover is low."

The company's revenue per employee climbed from $90,000 in 1981 to $146,600 last year, while the industry average remained constant at $80,000, according to Warren.

Revenue for the nine months to December 31 were $20 million, with net profits of $2.4 million, compared with the equivalent period a year ago when revenues were $12 million and profits $2.6 million.

WARREN . . . "We think we're first."

SALES BRIEF

BT's buys from Ferranti reach £12m

BRITISH Telecom has now spent over £12 million on Ferranti terminals since its split from the Post Office in October 1981. The latest £500,000 order for 300 PT7 programmable terminals brings BT's stock of Ferranti VDUs to over 6,000, as well as 700 PT7 cluster controllers.

The PT7 can be linked to BT's existing ICL and IBM mainframes, providing dual emulation from one terminal.

Refuse collection

LAMSAC'S refuse collection system, Ross, has now found its way into Australia. After winning several orders in the US, Lamsac, the Local Authorities Management Services and Computer Committee, has signed a contract with the Local Government and Shires Associations of New South Wales, which will market the Ross product, designed to improve efficiency of rubbish collection.

NCC gains rights

ICL HAS granted the National Computing Centre exclusive rights to market its audio-visual training package for the VME operating system. This means that UK ICL users will be able to rent the package under the NCC's rental scheme, and overseas customers will have access to it from the NCC International Division.

Ireland contract

HONEYWELL has taken the £2.5 million contract for the second phase of Ireland's local government computerisation. The contract was awarded despite the fact that Honeywell has no manufacturing base in Ireland, although some rival companies do.

Champs in China

THE Champs hotel management systems, marketed by Thoro-EMI's Software Sciences, has been installed in two hotels in China, including the 2,150-room Lido Hotel at Peking airport. Champs handles hotel administration, including restaurant point of sale, guest billing, bookings and telephone monitoring.

Far East deal

SHORTLANDS Computing Services of London has signed a £500,000 export contract with CSA, a software house based in Singapore, to market and distribute business software in the Far East. Involved are multi-currency packages for Unix-based micros, embracing general ledger, purchase ledger, cash book and cost ledger.

Gould's first

GOULD SEL has taken its first order for its new mid-range 32/67 super-mini, from Birmingham University's electronic and electrical engineering department. The machine, for use in post-graduate research and undergraduate teaching, will be implemented with the unit operating system. A typical 32/67 configuration costs about £100,000.

Dairy automation

APV INTERNATIONAL, Sussex-based maker of automated manufacturing equipment, has taken a £1 million order to automate a dairy in Reykjavik, capital of Iceland. APV International is part of the APV Group, based in Crawley in Sussex, which turned over £400 million last year.

Electricity control

THE Midlands Electricity Board on Tuesday switched on a £2.3 million telecontrol system supplied by Ferranti. The system will provide remote control of substations and automatic reduction of voltage according to predefined rota or surge in demand.

NCR prepares to attack the office

by Paul Walton

NCR is set to launch a new mid-range machine to take on the computer industry giants in the office automation market.

The company is buying in systems software and some hardware to add to its own efforts to sell what it calls "departmental systems architecture" – integrated systems based on a common bus with Ethernet connections.

The company's new range of machines, the V-series, is to replace its current 8500/8600 mainframes and is aimed to compete directly with the IBM 4331/4341. It is to be launched in May and scheduled for installation by the end of the year.

Nick-named "Instant Ready", the range uses NCR's proprietary 32-bit chip set which was first used in the 9300 super mini and a distributed version of the company's VRX (Virtual Resource Executive) operating system for the first time.

It will offer continuous service of the Tandem Non-Stop style through a capability of linking the hardware components and using redundant processing capacity on the 32-bit chips. Users will have the option of buying a conventional processor first and adding the continuous processing as an optional extra.

Henry Thornhill, NCR UK's man in charge of the V series, says that it will "move away from being tightly-coupled, or having the operating system in one central processor, to be a loosely-coupled multi-processor".

Instant Readys are departmental machines because they sit on a common bus, or network, onto which all other NCR products are linked through the SCSI (or Small Computer Systems Interface).

The VRX operating regime will begin to overlap and interwork with the IRX (or Interactive RX) mini systems. Around the office, NCR will support links via Ethernet.

The heart of NCR's range will be predominantly based on the Unix System V operating system: both the 9300 Vax-alike and the Tower office processor will interwork through Unix.

The NCR Decision Mate V micro, currently an 8/16-bit (CP/M-86 and MS-DOS) double, will soon get true 32-bit working and Unix making it a treble operating system workstation, according to NCR.

In the UK, the company has set up a product marketing group to smooth over systems integration and marketing. Graham Miller, director of the group, says that NCR "is now committed to becoming the supplier of office automation by the mid-1980s", and adds that this would be achieved by swinging the focus away from individual products and "concentrating on the complete system based at departmental level".

Both the DMV micro and 9300 mini will be improved in 1984.

An American product, NCR's WorkSaver word processing workstation, will also herald the start of a new line of office systems based on the Convergent Technologies machines.

Larger items of systems software, especially productivity tools and standard applications, will be brought in. The first such package is Informatics Corp's well-known system generator TAPS (or Terminal Application Programming System), due for release with the Instant Ready mainframes.

MILLER . . . "Committed to becoming the supplier of office automation by the mid-1980s."

Olivetti wins part of £3m deal with South Africa

by Donald Kennett

OLIVETTI and UK software house Systems Designers have won a £3 million contract for the South African public viewdata system.

The other contenders on the shortlist were GEC, Sperry and a consortium from France. IBM was invited to tender but withdrew its bid, advising the Post Office to wait another year before going ahead. IBM has suffered major delays to its implementation of the West German Bundespost's Bildschirmtext system.

The contract covers software enhancements to the trial system until the full system comes into service in the summer of next year. The full service will run on a network of seven DEC Vax superminis in Pretoria, Johannesburg, Capetown and Durban.

It will have a main database with 5 million pages for information services and a further 200,000 pages for message services. Subsidiary nodes will have cache databases to hold information frequently accessed from the main database.

A spokesman for SDL says that the service will differ from British Telecom's Prestel by placing more emphasis on gateways to external computers and by making use of CEPT (Conference of European Postal and Telecommunications administrations) display standards. This follows the example set by Bildschirmtext.

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Wordplex picks PC compatibles

by Keith Holder

WORD processor manufacturer Wordplex has turned to US micro maker Corona Data Systems for a range of IBM PC compatible machines for office automation.

A multi-million dollar OEM deal has been agreed for machines already seen under Corona's own label. Alan Adler, OEM sales manager for Corona, says that this is one of several such deals in progress.

Corona, says Adler, is looking to supply its machines to companies which have developed a strong presence in more specialised markets. "Wordplex is a quality company in office automation; we are very pleased to be doing business with them." This is the first time Wordplex will market a machine not built at its own factories.

Wordplex is the second-largest supplier of word processors in the UK, with over 5,700 units installed. UK turnover was £19.4 million last year, an increase of 30% on 1983, and the company is hoping to push this to £25 million this year. The UK accounts for around 35% of sales.

Three machines are offered by Wordplex. The first is a standard PC model, with 128 Kbytes of RAM, expandable to 512 Kbytes, based on the Intel 8088 processor. It features full IBM PC compatibility, high resolution 12in screen and two 320K floppy disc drives.

Next comes the XT model, which internally is identical with the PC, but has a 10 Mbyte Winchester disc drive.

Lastly, there is a portable version. With a weight of over 20lb, however, its maker admits that this puts the machine more into the transportable class. It carries the same specification as the PC, but the screen is shrunk to 9in.

All the machines run MS-DOS and use Corona's version of Basic. A PC tutor package to help users familiarise themselves with the product is included in the price.

Optional extras include colour boards, Epson printers, word and mouse. Software packages offered include the Multiplan worksheet, Lotus 1-2-3 and the Friday electronic filing system.

Roger Winder, Wordplex's director of marketing, strongly denies that the introduction of these machines will damage sales of the company's word processor range. "What most people don't realise," he says, "is that word processing packages designed to run on micros are only suitable for occasional use, and won't cope with the workload that, say, an office secretary would require."

He adds that the introduction of the micros is only the next step in the company's bid to become a supplier of complete systems for office automation.

The system approach will become more apparent when the company launches its System 8000 file/resources network connector next month which allows micros, word-processors and peripherals to be used either as a distributed system or connected to the Racal Planet network.

Micro diploma is in offing

by Philip Hunter

UK SCHOOLS and technical colleges could next year be offering nationally recognised diploma courses on practical microcomputer applications. The Royal Society of Arts, one of the leading national examining boards, is looking closely at a diploma course being taught this year at five schools and an adult technical college in Milton Keynes.

"They want to take it off us and validate it nationally," says a spokesman for the Milton Keynes Industry-Education Liaison Committee, which produced the idea for the course.

The course is a joint initiative between schools and local industry in Milton Keynes, to provide instruction in microcomputer operation and use of business software, such as financial spreadsheets.

"Our aim is to teach the concept rather than specific skills," says Andrew Fluck, head of computing at Stantonbury Campus, a local school involved in the course. "The idea is not to give specific instruction in programming, but to teach general details of how to handle a silicon office."

The course includes 40 hours of direct teaching, and 40 hours' unsupervised use of micros, spread over a school year. There are eight sections, including viewdata, accounts software packages, commercial applications, and there is a visit to see how local businesses use micros. The course ends with a practical business project, such as using a word processor to prepare a report.

Fluck says there are plans to extend the course to cover more advanced applications, such as integrated business packages.

At the same time the present course may become part of the foundation training for science students at universities. Schools in Croydon are also offering a diploma course aimed more at 12-13 year olds.

FLUCK . . . "Teach concept."

BT policy has put UK ahead, says Butcher

by Nuala Moran

INDUSTRY Minister John Butcher claimed last week that the UK had stolen a march on other European PTTs because of the government's policy of liberalising British Telecom.

This would lead to London becoming the value added network services (Vans) centre for Western Europe, he said. So far 72 companies have been licensed in the UK for over 200 Vans.

"We have created the most liberal Vans regime in the world and privatisation later this year will stimulate competition and innovation which will be the key to the growth of Vans experience," said Butcher. He added that this would lead to "London having the same presence in telecomms services as it does in financial services."

Butcher was speaking at the opening of Mohawk Data Sciences' (MDS) electronic mail centre in London. Called Winc (the Worldwide Integrated Communications Centre), it is tied into an international network.

The centre in London which uses DEC hardware is linked to another Winc centre in Connecticut. Winc has been available in the US for seven years and Richard Harcus, marketing manager for Winc, says that pressure from US subscribers wanting to link to European subsidiaries is one of the factors that influenced MDS setting Winc up here.

Winc is based on a central computer dialling subscribers at predetermined intervals 24 hours per day. An MDS Series 21 computer installed at the subscriber's office sends messages to the central computer and accepts incoming data from the network. Foreground tasks, such as word processing, can continue during the time the terminal is connected to the host.

There are eight subscribers so far, including Ford, Memorex and Perkin-Elmer, and Harcus says he expects to sign up four more by April. According to Harcus, the Winc service is cheaper than phone or telex.

"Winc costs 50% less than telex going from the US to the UK and 10-15% from the UK to the US," he says.

What do you think about structuring?

by George Black

THE controversy over use of structured methods within data processing departments has prompted *Computer Weekly* to initiate a survey on their use.

Last November, a scheme put forward by the National Computing Centre (NCC) to bring structured methods into its systems analysis courses met with considerable criticism. The examinations board of The British Computer Society, which is under NCC supervision, says the new approach must be followed from December of this year.

The board, however, has been accused of forcing the pace, and of running the risk of deterring students from entering examinations.

Some 13,000 people have passed the examinations since the late sixties, and basic systems certificates continue to be awarded at the rate of about 1,000 per year.

Datasolve Education, whose general manager, Don Yeates, is chairman of the BCS Systems Analysis Examination Board, has agreed to do most of the research on the proposed survey.

Computer Weekly readers are asked to complete the form below and return it to CW Structured Survey, Room 1.218, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS. A representative selection of installations which respond to the survey will be asked if they can be visited so as to obtain more qualitative information. A report on the survey's conclusions will be printed in *Computer Weekly*.

Name .....

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..... Tel. No. .....

1. Do you use structured methods for analysis and design? Yes ☐ No ☐

2. If yes, which methodology? .....

Do you use structured programming techniques, and if so, which? .....

Why did you change to structured methods? .....

What benefits did you expect to get? .....

Have the expected benefits materialised? .....

What specific structured systems tool do you use? (eg dataflow diagrams, structured walkthroughs, data dictionary, structured English, decision tables, data structure diagrams, others.)

3. If no, did you decide not to change because of specific problems, and if so, which problems? .....

Do you plan to take steps towards structured methods? .....

Within the next six months? ☐ 6-12 months? ☐ 12-24 months? ☐

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FRESH . . . "Expected 2,500 registrations turned into 30,000."

MPs slam Data Bill again

by George Black

THE Data Protection Bill returned to the Commons last Monday and passed its second reading amidst a mounting wave of criticism of its potential effectiveness.

Critics of all political colours have told the government that its plans will not work, despite the amendments made by the Lords.

The main point that they make is that the number of registrations will be too large for the resources of the registrar to handle.

Home Secretary Leon Brittan made an effort to conciliate the Bill's critics by telling the House: "There may well be further improvements still to come." But this had little effect on those who believe that the scope of the Bill is too wide.

At a recent briefing of a British parliamentary committee, the Swedish data protection commissioner, Ian Freese, said they had expected 2,500 registrations and now had 30,000 to be handled by 30 staff. The UK registrar is expected to appoint 20 staff. But in 1982, the Home Office listed 180,000 British businesses with a turnover of at least £250,000.

This week, Ted Cluff, secretary general of the Institute of Data Processing Managers, said that many other smaller businesses would also be involved because amendments to exempt common files such as accounting would allow very few firms to escape registration.

One MP estimated that Britain would need seven commissioners and 300 staff to be able to cope.

Cluff commented: "The Bill won't work. It'll be a terrible waste of our members' time and money but it will probably be enough for the government to be able to ratify the Council of Europe convention."

The National Council for Civil Liberties (NCCL) doubts whether it would even achieve that aim.

General secretary Larry Gostin says: "The British Bill is the weakest in Europe and may well not comply, because of the Home Secretary's sweeping powers and the exemptions for police and national security. These do not exist in any of the other European countries which have laws on the subject."

The Consumers' Association has come out in support of the NCCL's campaign for clerical records to be covered by the legislation. It recently carried out a survey on privacy.

"People want and expect personal information to be kept confidential, but they trust few organisations to do this," says director Peter Goldman. "Even those they trust most – doctors and hospitals – do under certain circumstances disclose private information."

Finance and credit card companies are particularly distrusted on confidentiality, according to the survey. Nearly half those questioned did not believe their employers always kept information confidential.

Tebbit's DoTI plan aims to win exports

by George Black

SECRETARY of State Norman Tebbit has shaken up the Department of Trade and Industry to make it push exports and to strengthen the telecomms and information technology divisions.

In so doing, he may have made it impossible for a future Labour government to split trade from industry as the Wilson government did in the mid-70s on taking over from the Heath government.

Ther merger of trade and industry was begun by Cecil Parkinson shortly after the general election last summer and has now been completed by his successor.

In an introduction to a new leaflet explaining the changes, called *Aims*, Tebbit writes: "The distinctions between service and manufacturing industries in home and export markets matter little to the creators of wealth, and the new organisation ensures that industrial and commercial policies are designed in harmony from their inception, rather than co-ordinated after leaving their separate stables."

Industry divisions such as telecomms and information technology will gain control over their own export and regulatory affairs, which were formerly handled by the trade side.

Official sources said that Tebbit intended to give more backing to efforts to diffuse new technology both into British manufacturing and engineering industry and into the government itself.

Observers on the Labour side, however, view the announcement as more of a muscle-flexing gesture by Tebbit in warming up for a struggle with Chancellor Nigel Lawson.

They point to Tebbit's assertions that his is "the other main economic department beside the Treasury" and "the only department beside the Treasury to have two permanent secretaries".

Tebbit's keenness to underpin worthwhile computer ventures is bound to come under critical scrutiny from Treasury officials trying to keep expenditure down and achieve tax cuts.

But at the same time, official sources emphasise that the re-organisation is one of method, not of policy. Tebbit sticks closely to the approach of his predecessor, Cecil Parkinson, in his commitment to fighting protectionism.

Labour's campaign document for the last general election pledged the party to set up a new Department for Economic and Industrial Planning, to end the conflict between the DoTI and the Treasury. But last week, a party spokesman could not say if this was likely to be the policy when the next election came round.

NEC plans second UK factory

A DECISION is pending in Tokyo on plans which the Nippon Electric Company (NEC) has to set up a second factory in the UK. The factory will make telecommunications equipment. NEC already has a chip factory in Livingston, Scotland, which started production in October 1982. At the moment, 200 people work there and this number is planned to go up by 600 by the end of 1985.

Davidson moves

BURROUGHS' general marketing manager, Iain Davidson, has left the company to take over as Data General's UK sales manager. Davidson replaces John Filmer, who was recently appointed to head Data General's Australian operation.

PPL personnel

UK APPLICATIONS software supplier Package Programs Limited (PPL), which had a turnover of £5 million last year, has entered the computer personnel recruitment field. Chairman Roy Taylor says that the new division will cover the whole industry and expects it to account for about 2-3% of his turnover next year.

Windsor start-up

US LOCAL network company Ungermann-Bass has set up its own UK operation. The Windsor-based subsidiary is headed by Ron Davis, formerly network product manager at Ungermann-Bass's UK distributor Thame Systems. Davis says that the growth of UK business means direct support is needed.

March for books

MARCH will be Computer Book month, and 150 nationwide booksellers will stage window displays of computer books and software. John Wiley and Sons will sponsor the event, and will exhibit its own publications as well as others it distributes, including books from the National Computing Centre, Sigma Technical Press, and software from Acornsoft.

SCHRYVER . . . "Choice of processor is irrelevant."

Lynwood aims to trap IBM users

by Philip Hunter

IBM users in the UK now have an independent British source for intelligent terminals.

Lynwood, which claims to be the leading privately-owned UK maker of intelligent terminals, last week launched Traps, a transaction processing package which enables its Alpha terminals to take over forms handling and validation tasks from the host mainframe.

The company has also launched an IBM 3274 emulation package for its Alpha terminal range, offering the standard IBM features plus high resolution graphics.

Lynwood makes two terminals, the eight-bit Beta, based on the Z80A, with 8K memory and costing around £1,000, and the 16-bit Z8000-based Alpha with 192K internal memory for between £1,400 and £2,000.

The colour version of the Alpha costs £1,000 more. Technical director Andrew Schryver says that the actual choice of processor for the terminal is arbitrary. "The choice of processor is irrelevant, as IBM has shown," he says.

Managing director Hector Brown claims that Lynwood was one of the first companies in the world to use a 16-bit processor in a terminal in 1975. Last year, the company turned over £5.3 million, and Brown says it is heading for £9.5 million for year ending June 30, 1984.

The company manufacturers at Alton in Hampshire, and has offices in London and Harrogate, plus subsidiaries in Holland and Switzerland.

Total staff is 200, but Brown says this should increase in 1984 with new offices planned in the Midlands and Scotland.

In the UK, the company handles its own marketing and support, but sells through distributors abroad.

The company recently bought Dyadic, a small UK specialist in software written in the APL language.

Times 10

LAST week's Micro News story about Apple and its Macintosh said that the planned production for the new micro would be 4,000 units per month by the end of this year. That should have been 40,000 Macintoshes a month – a rate of around half a million per year.

Keele researches

THREE ICL Perq workstations running on the Unix United operating system will go to Keele University's Computer Science department for a three-year £195,000 government-funded project to try to boost the reliability and functionality of data management in distributed computer systems.

Benefits cuts will hit ICL package

by John Kavanagh

ICL's troubled local authority package which handles social security benefits has hit new problems because of government plans to cut benefits by £230 million.

ICL and the 40 users of its housing benefits system say they cannot make the changes in time for the start of the new financial year on April 1.

But other suppliers and their users are confident that the deadline can be met, even though social security minister Dr Rhodes Boyson has not yet announced all the details of the changes.

The housing benefits rules took effect last April. By the summer, local authorities – traditionally ICL's staunchest allies – were saying its failure to deliver a working system had cost them extra work and long delays in getting out rates and rents demands and rebates.

This week, Guildford city data processing manager Tim Russell said: "We're very concerned about the proposed changes. After our experience of the last year it doesn't look as if ICL will do it in time.

"We're considering moving to a hybrid system which would be mainly manual – and the computer part wouldn't be ICL. We are talking to other suppliers."

Brian Thompson, treasurer at Wychavon District, says ICL had not provided programs to run year-end routines yet. "They can't be working on those routines and run the changes," he says.

Thompson adds: "We will have to carry on providing benefits under the old rules and then recover the payments later. This could mean taking money back from pensioners."

But Thompson also blames civil servants. "I don't think people in Whitehall appreciate the impact of what they're doing," he says. "These changes will be introduced at the year end, our busiest time."

But other companies' users are more optimistic. At Babergh District, which uses a system from F International, assistant treasurer Mike Cheese says there will be "no problem".

"It's a nuisance, but it will be done on time because most of the changes will be handled by simply amending parameters," he says.

NCR local authority manager Phil Gleghorn says: "If the changes are as we expect, there should be no problem."

Geoff Rees, managing director of Business Micro Systems, says: "There's no question, it's a problem. If they settled on the details today we could just about produce a code which would be tested by use but not by users."

MSC starts adult IT scheme

by Nuala Moran

A SCHEME to provide adults with information technology training is being launched by the Manpower Services Commission at nine of its regional Skillcentres. The first of these courses will take place either at Plymouth, Birmingham or Letchworth later this month.

An MSC spokesman says: "The idea is to set up something rather like an ITEC for adults. The training will definitely be practical, including computer technology, CAD/CAM and so on."

ITECs (Information Technology Education Centres) are designed to give practical experience to school leavers with 'O' and 'A' levels.

The kind of skills taught are usually related to local industries. The idea is to create a commercial environment, and ITECs are registered companies.

At the same time, plans to revamp the 87 Skillcentres in the country so that they can "meet the challenges of the new technical age", are being looked at by the government. The plans have already been approved by the MSC itself.

Reorganisation began last year when the 87 Skillcentres were placed under the Skillcentre Training Agency.

The Agency was told to make the centres self-supporting by going out into the market and selling their services on a trading account basis. According to the MSC's plans, this should mean full cost recovery from 1986/87 onwards.

Most of the Skillcentre's business is in the Training Opportunities Programme (Tops). Last year, plans were announced to change the computer training offered by Tops following complaints by the industry that the courses were not producing people it could use.

Net earnings up

MOTOROLA has reported net earnings up 37% in 1983, at $244 million, on sales up 27% at $1.27 billion. Earnings rose from $63 million to $95 million in the fourth quarter.

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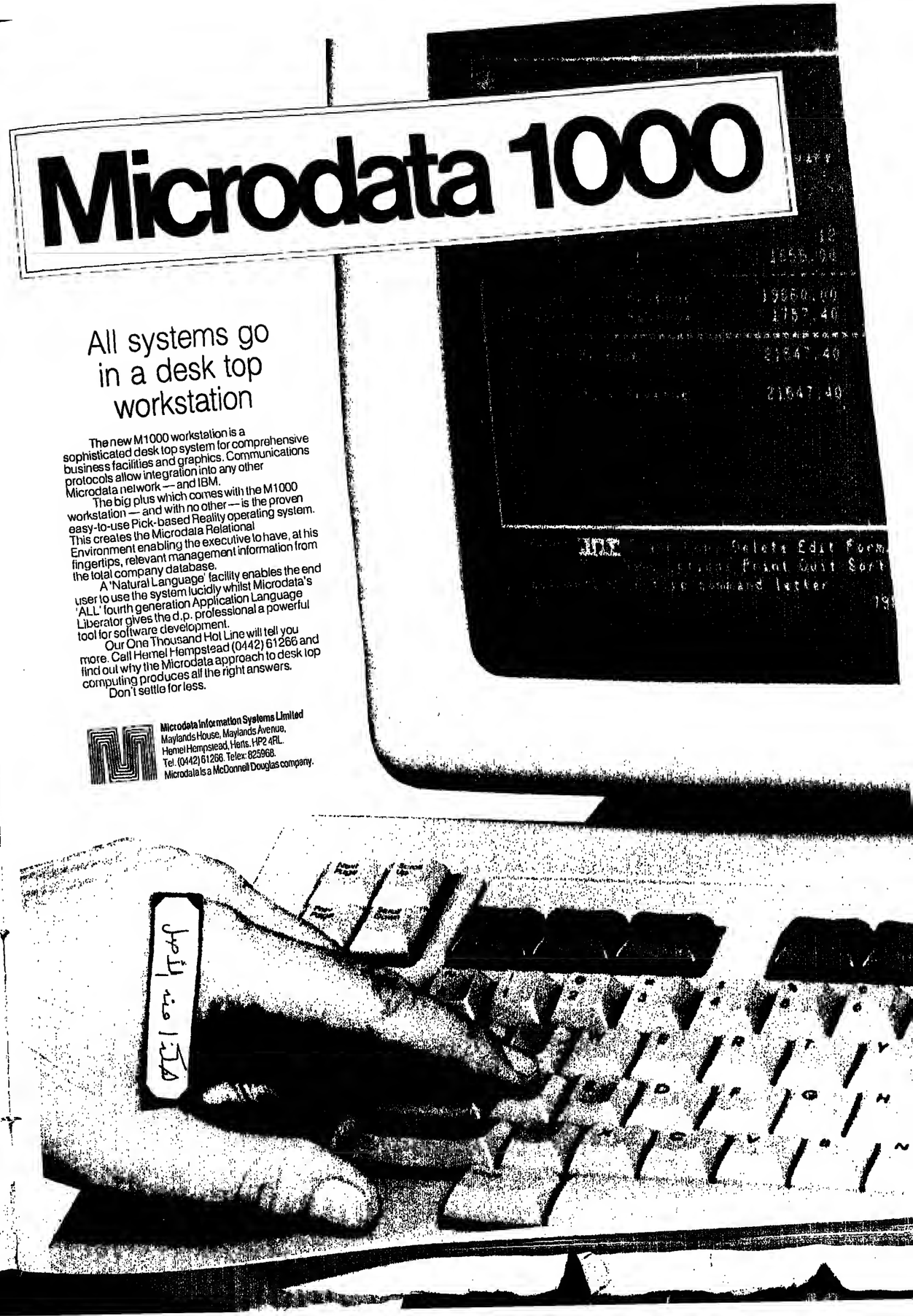

Burroughs begins its big A9 drive

by Dave Maddeo

BURROUGHS has launched the first in a new family of mainframes which will succeed its current generation from the B1900 up to the large-scale B7900 models.

The first in the new line, the A9, replaces the B6900 system. The company is currently developing the rest of the series.

Burroughs is anxious to show that the A9 system remains object code compatible with the company's other mainframes – from the 5900 to the 7900.

Like the 7900, the system consists of a central processor unit (CPU) surrounded by functional subsystems – handling memory, input/output, data communications for example. But Burroughs claims that its implementation of its own architecture within the CPU is a radical departure.

The main component of the CPU is a multiple logical processor. With this device each set of hardware instructions is considered a micro-program or "task", and the A9 multiprocesses these "tasks".

By offering three logical processors within a single A9 complex, the system does not have to work on the object code in the exact order in which the compiler emits it. In effect, Burroughs introduces an element of parallelism to increase performance.

Martin Fennell, manager of the A series, explains: "We have two choices in improving throughput – we can increase the clock rate, or as in the A9, we can develop an intelligent processor."

Rather than handle operators sequentially, the A9 Multiple Logical Processor will look at a series of instructions and process them concurrently where they are not inter-dependent. Fennell says: "This is a fundamental enhancement and it is not technology-dependent."

The other obvious development from the B6900 is that the A9 is built around a 100K emitter – coupled logic circuit technology – from Fairchild – which brings an improvement in power consumption and reliability.

There are three models in the range. An entry level A9B comes with a CPU and six Mbytes of main memory. Memory is expandable to 24 Mbytes in the A9F, which also has a cache memory system.

Burroughs says that its architecture makes a mips rating irrelevant, but the input-output subsystem can manage a peak six Mbyte per second data transfer rate of 4.5 Mbytes per second over time. The A9F is 100% more powerful than the current B6900.

All the machines run the Burroughs master control program system software and the company says that existing B5000/B6000 program libraries can be used without modification.

FENNELL . . . "Multiple logical processor is a fundamental enhancement."

It is releasing a new query system, BRGO – extended retrieval with graphic output.

UK prices are yet to be settled, but it looks as if the A9B will cost £260,000, the A9D £360,000, and the top-end A9F £460,000. The A9F will be the first machine available in the UK, with shipment due in the third quarter of 1984.

Burroughs has decided to produce the A9F first as the direct replacement for the B6900, which is now dropped.

The A9B and A9D are seen as natural upgrades for Burroughs 1800/1900 and B5900 users.

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Field service cash will slump, predicts report

by Keith Holder

FIELD service revenue in Europe will be on the decline by 1985, according to Input's annual review of the maintenance market*, published last week. It is the first time that a drop in this market has been forecast since the company began its surveys.

Users will spend less, and rely more on independent service companies. That will cause the market to experience a "correction" based on price, technological and economic factors, says the report.

More reliable machinery and fault-free or fault-tolerant equipment will also make it easier to survive on less service support, the report says.

All is not gloomy for the maintenance industry, however: the downward trend will be short-lived, and completely reversed by 1987. Engineers will remain in demand to cover new territories, products and services, the report concludes.

The report also highlights user dissatisfaction with maintenance in Europe. Response times, lack of capabilities, software service, cost and the time taken for spares to arrive are the chief criticisms.

The story is similar for service, with low quality and delays two of the main complaints.

What users want most, says the report, is more spares, better training, faster response times and better diagnosis. Only 1% of people questioned wanted more frequent visits.

**European field services programme 1983 annual report*, Input, 35 Fiscadilly, London W1V 9PB. Tel: 01-439 8985.

Thorn buys again

by Dnoald Kennett

THORN-EMI's latest expansion into viewdata services has been to acquire the viewdata interests of Mills & Allen, the poster advertising, money broking and insurance group.

Mills & Allen was one of the earliest information providers on Prestel, and its operations included managing databases for a number of other companies.

These activities have been merged into Thorn-EMI's Datasolve division, which was itself an earlier acquisition and which has already been an "umbrella information provider" – managing databases on Prestel on behalf of other companies – for some time.

Mills & Allen's information provider operation joins two other similar services bought in last year from the *Financial Times* in December (Fintel) and from Link House Publications in May.

As part of the same deal, the company's interests in computer-based training have moved into Datasolve Education, the division that runs conventional training services and which has been involved in the Manpower Services Commission's Youth Opportunities Training scheme.

The core of this part of the deal is Mills & Allen's training software-writing program, Combat, which runs under the UCSD p-System on a number of microcomputers including the IBM-PC and the Sirius.

The viewdata activities come under Datasolve Retail, whose general manager, Richard Dove, says: "We consider it strategic. We hope to follow these acquisitions with subsequent acquisitions. We want it first as a business in itself, to make money, and secondly to move past that into interactive services to back up that business."

Dove sees his initial markets as the travel industry, home banking, teleshopping and insurance. "But it's early days for videotex activity," he says.

His company already runs an automated book ordering system called Teleordering, which is based on 150 Texas Instruments microcomputer terminals in bookshops polled by Datasolve's mainframes. The service is four years old and it already handles 25% of all book trade orders. These include all W. H. Smith's book orders, although W. H. Smith collects them all itself and passes them to Datasolve over a single link. Datasolve passes them on to more than 2,000 publishers.

"In February last year, we introduced a Prestel Gateway to the system to aim at the cheaper end of the market," says Dove. "It's my belief that this is the route for major expansion."

The retail division is looking at systems for polling point-of-sale terminals and is running trials of a service using hand-held data collection terminals, from which sales reps send in orders via an acoustic coupler each night.

Philips has doubts about Bull liaison

by Jack Gee

THE alliance planned between France's state-owned Bull and Philips Data Systems to market Smart memory cards with identical technological specifications appears to have run into a last-minute hitch following doubts by the Dutch multinational about the advantages of the venture.

"There are benefits in having a common system," Herve Nora, head of Bull's memory card division said last week. "Together we can open up the market. If we join forces on using the same chip, we make ourselves more credible."

Bull, which has put the card's memory and microprocessor on a single chip (Motorola 6805 with 2 Kb of ROM, one Kb of EPROM and 40 bytes of RAM) is backed by the French Telecommunications Authority in its efforts to persuade Philips to follow suit.

At present, Philips is using two chips, one a standard Intel 8048 microprocessor, the other an EPROM.

"We agree there are advantages in using the same component," says Andre-Jacques Selezneff, advanced projects manager at Philips Data systems' Paris headquarters. "But that's not the entire story."

Selezneff added: "Bull's interest in getting agreement on a joint system is clear as this would increase the sales chart of a firm which lacks the worldwide marketing power of Philips. So Philip's interest in common component supply is certainly not as strong as Bull's."

He added: "Philips, which got its card to the testing stage both in France and the US well before Bull, is geared to attack a much broader sales area than our French colleagues."

Selezneff pointed out that Philips has sold 100,000 banking terminals all over the world and can rely on finding clients for the Smart card among the long list of banks already using the terminals.

"Our computer products are being made in 20 of the 70 countries which make Philips goods. This score of countries are obvious targets for our memory card."

Alain Turbat, manager of the French Telecommunications Authority's memory card project group, said: "We are strongly in favour of having a single chip on both the Bull and Philips cards. The single chip offers better security – the memory is controlled by the microprocessor and cannot be broken into. It is also cheaper and easier to embody in the card."

French Telecom is a partner with France's leading banks in trials of the Bull and Philips Smart cards at shops, hooks and in pay telephones in Blois, Caen and Lyon.

Backing introduction of a single chip card, Roy Bright, head of Intelmatique, the marketing arm of French Telecom, said: "This is the way to make France's Smart cards really convincing on the export front and to win orders before the US and Japanese competitors move in."

France's Ministry of Posts and Telecommunications plans to issue 1.5 million multi-service Smart cards this year.

They will be used for public pay telephones, payment of videotex services – telebanking and telepayment for products ordered electronically by videotex – as decoders for France's fourth television channel (PAY TV) and as a payment mechanism for delegates at conferences and exhibitions.

The card will also be used by customers of France's postal cheque clearing bank which currently operates 7.6 million accounts.

WARD . . . "It's basically a one-stop shop for computing needs."

High Street micro competition hots up

by Philip Hunter

COMPETITION is increasing fast for High Street sales of business microcomputers, with two big name UK suppliers, Applied Computer Techniques (ACT) and Intelligence UK, planning national networks of shops.

ACT, like the huge US Computerland group, is franchising the stores out under the condition that no directly competitive products are stocked, and that 80% of the products are from ACT. The stores will sell both the Sirius and Apricot computers, and offer end-user support.

The plan eventually is to open 200 stores throughout the UK, with 20 in London, under the banner ACT Computerworld.

Intelligence is taking a different approach by aiming at vertical markets, with no plan to franchise the operation.

"The idea is that we man the retail outlets with the same sort of people as our systems house," says Intelligence managing director Ashley Ward.

The company last week opened its first store in the City of London, aiming to take £1½-2 million worth of business in the first year from the City's financial community.

The shop will stock the five makes of personal computer currently being distributed by Intelligence: the ACT Apricot and Sirius, the IBM-PC, and Wang and Seiko computers.

"It is basically a one-stop shop for computing needs," says Ward.

Included in the support package will be training for end-users, ranging from basic word processing to use of the powerful financial spreadsheet package Micromodeller, which the company supplies.

Ward says other stores will open elsewhere in the country to address different vertical markets such as manufacturing and engineering. He sees ACT Computerworld as a serious competitor, but dismisses Computerland, and other franchise groups.

"Computerland is not geared up to handling the more sophisticated prospects," he says.

DE CASTRO . . . "Value."

Data General recruits five top professors

by John Kavanagh

FIVE top US university professors are to advise minicomputer firm Data General on the long-term use of new technologies.

Data General president Ed de Castro said their experience would be "a resource of very significant potential value".

The five are: Dr Michael Dertouzos, professor of computer science and electrical engineering and director of the computer sciences laboratory at Massachusetts Institute of Technology; Dr James Meindl, professor of electrical engineering and director of the integrated systems centre at Stanford University; Dr David Patterson, associate professor of electrical engineering and computer sciences at the University of California; Dr Raj Reddy, professor of computer science and director of the robotics institute at Carnegie-Mellon University; and Dr Patrick Winston, professor of computer science and director of the artificial intelligence laboratory at Massachusetts Institute of Technology.

Unknown Scan grows

by Nuala Moran

AN optical character recognition (OCR) system which will read documents for data input at 2,000 characters per second will be launched in the UK by Scan Optics in March.

At this rate of input it is claimed the system can do in five seconds what it takes a data entry clerk at a terminal an hour to do. Such systems typically cost about £300,000.

Although Scan Optics has been around in the US since 1968, it is relatively unknown in the UK because until now it has sold through ICL. The company is going into direct selling under its own name. It has spent £250,000 setting up a sales and service organisation, going from four staff to 14, with more to follow.

At the same time it picked up two big contracts – with Barclaycard worth $3 million, and with the Driver and Vehicle Licensing Centre (DVLC), said to be worth £1 million.

UK general manager John Woods thinks that these two showpiece contracts plus the investment in service and support will give Scan Optics the credibility it needs to go after blue chip companies and government contracts.

"Our typical customer is a large sophisticated organisation which knows it has a problem," says US vice-president Clarence Rife. "Data entry has always been a bottleneck. What we have to offer is a cost justified solution – a straightforward increase in productivity.

"Our success in the US has allowed us to branch out in the UK and we have the knowledge and experience to know where our products fit best," he adds. Scan Optics Inc is based in East Hartford, Connecticut.

Woods expects the UK company, which is a wholly-owned subsidiary of the US company, to have a turnover of at least £2 million in 1984. "The market in the UK is worth at least £50 million," he adds.

Scan Optics is also poised for the image processing market. Rife says: "We have the capability, but the techniques for storing massive amounts of data are not quite there. But I think they will be in two to three years. Then the industry will explode, there are so many potential applications."

Image processing involves storing complete pages of data, for example drawings, exactly as they appear. The technique could be used for storing fingerprints or signatures.

Burroughs closes down factory

by Nuala Moran

BURROUGHS is to close its cash dispenser factory in Croydon, Surrey, with the loss of 259 jobs. Production will be moved to the US. The closure is part of a worldwide programme of rationalisation of its manufacturing capacity.

The move to Burroughs' factory at Plymouth, Michigan, would not involve any expansion there, said a spokesman.

The Croydon factory, opened in 1970, was purpose-built for Burroughs. The spokesman says there are no plans to use it for any other purpose. "The closure is wholly because of over-capacity and rationalisation."

This leaves Burroughs with four plants in the UK. In 1980, there were eight, occupying 1.2 million square feet. The main plants now are at Cumbernauld, Dumbartonshire, and Livingston, the new town on the edge of Edinburgh.

Plans to double the size of the Livingston factory to 200,000 square feet were announced last year.

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SOFTWARE FILE

Logica puts Rapport on the Perq

LOGICA'S Rapport relational database is to be marketed on ICL's Perq workstation through the ICL Tradeport distribution scheme. It will be run under the PNX Unix-based operating system with the windowing facilities. Rapport is also to be delivered in the US firm Perq Systems Corporation (formerly Three Rivers) in which ICL holds shares.

Bureau launch

BUREAU ADP Network Services has launched a project management system called APECS/8000 to run on a range of machines from micro to mainframe and under the Unix operating system. The system uses critical path techniques to help managers plan and control project schedules, resources and costs.

Into business

THE BBC Micro is edging into the business world with the addition of an APL package from Inner Product of London. It is to be called Acornsoft APL and will be available in two months under the CP/M business system.

PC collaboration

ASTON Technology of Birmingham and Interactive Data Machines of Doncaster are to collaborate to make the application generator System Builder available on the IBM-PC under the Pick operating system. Aston has the rights to the generator, while IDM has the rights to Pick on the PC.

Unix conversion

ORACLE Corporation of California has converted its relational database to run under Unix System V. Oracle is to sell the product itself in the UK and Ireland after ending its two-year distribution agreement with software house CACI. President Larry Ellison claims the product to be 98% operating system-independent.

Productivity tool

TANGENT Computer Services of Essex is to sell the Canadian software productivity tool for IBM mainframes called tableBASE. An agreement has been announced between Tangent and Data Kinetics for the tool.

Software File is compiled by George Black

Overload solution arrives in the UK

ELDRIDGE . . . Important implications under privacy law.

A NEW solution to the problem of mainframe overload is about to come on the market in this country.

It is a hybrid – both nationally and technically. Devised in California by the partnership of American David Britton and expatriate Englishman Geoff Lee, it is to be imported by Thorn-EMI's subsidiary Software Sciences.

The trick they claim to have figured out is how to relieve the large machine with a back-end processor running a relational database.

According to Britton, mainframes which evolved on the standard Von Neumann architecture were never well-suited to commercial data processing, having been created for scientific work. The result was that in putting sophisticated database software on to them, the system would seize up with as few as four users.

The problem is common, he claims, when running IBM's SQL package on a 4300 and will not be much alleviated when it offers DB-2 running under MVS on a more powerful machine.

Similar troubles occur with most other makes of hardware.

In 1979 he and Lee, who were systems builders for BASF, tried to interest BASF in backing the idea of a hardware-independent database machine. But they say BASF did not know what they meant. So they raised £11.5 million capital for their own firm to do the development – most of it from the UK, including a contribution from the British Technology Group.

They appointed as project leader Robert Epstein of Berkeley University, with which they still have close ties. They admit that the scheme turned out more difficult than anticipated; it has been very delayed in coming to market. But they now claim over 100 OS users.

They have signed a deal for Software Sciences to distribute and support the product in the UK. It will be able to take up to 64 host machines.

Prices will start at about £50,000. Britton claims that an IBM-PC and his purpose-built add-on will have more power than a 4300 running a package.

Timing will be of the essence. Field leader was Intel, with a machine which may have been pitched at too low a level to gain much success. It was the same snag that held up Britton-Lee.

"We don't want to leave too much to the user, so we have to get it right before the launch," he says.

IBM itself meanwhile will probably follow with such a device. Software Sciences marketing director Fred Eldridge said such systems would have important implications when the new data protection law forced users to store their data more securely.

Alvey reliance on Unix is questioned

DOUBTS about the Alvey Programme's commitment to Unix were raised at a seminar attended by representatives of 100 British firms last week.

The directors of the national fifth generation plan were warned it would be unwise to rely on enhancing an American product while speculation was mounting about a possible technical embargo.

Several delegates said that though there was no alternative to backing Unix at present, the directors should broaden the scope of the programme to give the UK greater independence in the future.

After the private meeting, Alvey software director David Talbar's only comment was: "Well, at least I didn't get any bricks thrown at me."

Mark Dowson, of Imperial Software Technology, one of the critics at the meeting, said later: "We should think seriously about Unix as a short-term measure. I do not suggest we should develop an alternative, but I think the operating system may become a less important feature. Databases and formal specifications are the areas we should look at.

"If we rely wholly on Unix we may find we cannot get hold of parts of the system which are restricted to the US, such as the security features."

Evidence for the rapid spread of interest in Unix was available at the first exhibition staged by the UK User Group in London.

NCR began a campaign to bring Unix to the medium-to-small business through its Wales and West distributor Bridge Computers. Bridge signed a £400,000 deal for 20 NCR Tower machines, NCR's 68000 based micro, and a mix of Unix applications from Sphinx.

Meanwhile the government procurement agency, the CCTA, is conducting an evaluation exercise of a number of Unix-based systems.

These include both Uniplus and Xenix, the versions offered by Unisoft and Microsoft respectively, and both are available on the Plessey micro which the CCTA is testing.

A decision is expected in the spring.

PICKETT . . . Implementation phase.

New Ada ideas are flooding in

Michael Pickett, senior Ada consultant of the CAP group, continues the series he began last October on Ada development.

A PROGRAMMER really has quite an easy job. There are only two things to be done: get the system working and keep it working. Unfortunately, that can turn into a lifetime's work if insufficient attention is paid to any particular aspect of the lifetime of the system.

It is usual to consider a computer-based system as having a life cycle rather than a lifetime, in that often it replaces an earlier (perhaps non-computer based) system, and it is expected that one day it will be replaced in its turn by something better.

During that life cycle the system evolves from something that can best be described as a need or a want (not the same thing) to an artefact which, to a greater or lesser extent, reflects that initial concept. On the way many phases can be identified, but there is as yet no standard classification for these phases.

A typical life cycle model might encompass the identification of the need, an initial statement of requirements, an analysis of the requirements resulting in a specification, conversion of the specification into a design for the system, followed by a specific implementation of that design.

The life cycle does not end there, though. Often along the way compromises are made; facets of what is to be done are misconstrued; sometimes even mistakes are made. More fundamentally, time has passed and the need is different. Materialisation and practical application serve to demonstrate both weaknesses and limitations in the concept. Imagination and creativity are given a new base from which to work. And so the system evolves yet further.

The development of Ada to date is an interesting example of this life cycle process. By the early 1970s, the US Department of Defence found that its expenditure on software for computers embedded in military equipment was in the region of $3.5 thousand million a year, largely due it was thought at the time, to a morass of totally inadequate programming languages which rapidly sucked in the money and showed very little return.

Although deeper investigation revealed that it was the approach to the whole life cycle of the systems that needed review, the immediate problem was seen as stabilisation of the programming language. The need had been felt.

In 1975, the High Order Language Working Group started taking soundings to establish what it was that users thought were the essential ingredients of a good programming language. Many ideas were presented, often in conflict with one another, and these were sifted and filtered, then published as the document known as Strawman, the initial statement of requirements.

Publication of this initial statement of requirements provided the basis for the next stage, the analysis of requirements. The analysis was such that the requirements were refined and republished as Woodenman, to be followed by further analysis and eventually the publication of a functional specification, Tinman.

It would be wrong to define a new language meeting these requirements was evolved and published as Ironman.

The design phase of the Ada life cycle was undertaken initially by four contractors, but again the phase was iterated, Ironman giving way to Steelman and only two of the contractors continuing with their designs. Eventually just one of the designs was retained and, after considerable refinement, became the Ada language we have today.

Ada's life cycle is now at the implementation phase. To be more accurate, versions of the implementation phase are proceeding more or less in parallel. Some, a very few, have been completed. Already the compromises and mistakes are being noted and new ideas are flooding in.

For a project so intimately associated with computers, the Ada life cycle itself made little use of computers in the early phases. It has nevertheless been successful, no doubt due to the painstaking care of each of the project managers who shared in its progress. It has undoubtedly been an expensive project.

Ada, the language, also does not address the early phases of a system life cycle, and it is Ada in conjunction with an accompanying tool set, an APSE, that is now seen as what is really required for full life cycle support.

The Ada project has received much publicity throughout its development. It has entirely overshadowed the two other initiatives which are equally if not more important for the efficient and cost-effective development of large systems.

The first of these is the identification and construction of the environment to support a project during its complete life cycle. This project was initiated by the US Department of Defence in a similar way to the Ada project and gave rise to documents Sandman, Pebbleman and Stoneman.

Unfortunately, although these documents present ideas for further work, no real directed development has taken place, and support environments under construction lack the coherence that has been evident from the Ada project.

Nevertheless the foundation is there and presents a challenge for would-be developers.

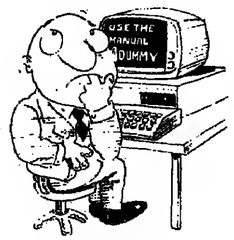
The other essential ingredient for successful life cycle support is method.

In conjunction with the Ada project but begun only recently by the Department of Defence is the project known as Methodman, but this has received little attention outside a small circle of specialists.

However, a well researched methodical approach using the right support tools throughout the life cycle is the means to making the most effective use of Ada.

Ada's life cycle is now at the implementation phase. To be more accurate, versions of the implementation phase are proceeding more or less in parallel. Some, a very few, have been completed. Already the compromises and mistakes are being noted and new ideas are flooding in

Is this the way to learn?



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MICRO NEWS

JACKSON . . . "Now running at $100 million a year."

Forecasters see a semi boom

by Keith Holder

BUSINESS is booming for semiconductor manufacturers, and the industry is set for a bumper year. This is the conclusion of three market research organisations.

Mackintash Yearbooks, which looks at the European market, estimates an increase in demand of 5.9%, taking the value of orders to $82 billion.

The strength of the recovery in the semiconductor industry has surprised even the manufacturers, adds the latest Icebreaker Report, and has found the major corporations short of capacity.

Don Beadle, National Semiconductor vice-president for marketing and sales in Europe, admits that his company "has demand above our ability to ship, especially in logic and linear circuitry". Europe is trailing last year's US recovery, but the battle for market share is hotting up as demand continues to grow.

This has prompted NatSemi to allocate $200 million for increasing production capacity and research and development, of which some $50 million will be spent on the company's UK facilities.

But the Japanese stand to gain most in terms of European market share, according to US market research company Dataquest. It estimates that Japanese manufacturers will reach revenues of $340 million, a rise of 57% over 1982, giving them 10% of the market.

Toshiba UK marketing manager for semiconductors, Phil Pitman, says the company has already had a good year in 1983 – he hopes to double its market share to 3% by 1986.

He confirms that, like NatSemi, Toshiba was running flat out at the moment and plans are at an advanced stage to increase production capacity.

Dataquest says that sales of MOS devices, particularly memory chips, is a major reason for the advance of companies like Toshiba, Fujitsu and Hitachi in Europe.

Their gains have been almost entirely at the expense of the US companies. European manufacturers have remained relatively stable as a group.

Intel, Motorola and NatSemi all say they expect to increase market share, through new releases and increased demand for popular chips, provided they can make them fast enough.

But Intel has already run into trouble under-estimating the demand for its 80186 and 80188 16-bit processor chips. Despite plans to triple production of the two chips, shortages are expected this year. These may be partially resolved by signing up a second source, like the company's technical partner, Advanced Micro Devices.

One thing the majors all seem confident of is that this level of demand is not transitory.

Package aims to tempt dealers

PROGRAMMES Technology, subsidiary of the telephone sales outfit Programmes Limited, is on the hunt for dealers to sell its own-label machine. But it claims to offer more than just the Programmes General micro: it is putting together a whole marketing package, including identifiable sales leads and a telephone sales campaign from its parent company.

"Our thinking is that machines come out at the rate of two a day," says Programmes Technology marketing director Martin Hill-Wilson. "You've got to do something that will interest dealers. We don't think a touch-screen or mouse is the way to do this.

"We have a reliable eight-bit business micro and some good software, but the general applications market is difficult to identify.

■ Programmes Technology was set up in September last year, not two years ago as stated in an earlier issue.

Altos shifts into OEM business

by Robert Parry

US micro maker Altos is refining its act. It has effectively dropped the Motorola 68000 products from its line of multi-user business micros, to concentrate on machines using the Intel 8086 processor family allied to the Unix operating system.

And it is starting to move hard into the OEM market, relying on big inroads here to boost turnover to the half-billion dollar mark.

"We are running at $100 million a year right now," says president Dive Jackson, who reckons to hit $140 million next financial year and nearly double that the year after.

"The jump will come through getting into the OEM market," he says. "We already have deals with CDC and ADP, and have been attacking large DEC system houses. But I am looking to get about 30% of business through the OEM market, which means bringing in new ones."

And bringing in new OEMs means taking them from Convergent Technologies.

By the end of the year new machines using Intel's 286 16-bitter will be coming from Altos, and will now be aimed squarely at the market presently served by Convergent. Altos will still be working on a high-end OEM machine using Motorola's 32-bit 68020 – just in case it is what the customers want, says Jackson.

"We still sell our 68000 box, but the future looks better with the Intel devices. All the majors have gone with them – especially IBM."

He adds that the 68000 machine is a "goldmine" now, as it sells itself, with no advertising or developing spending.

On the way to Altos' recovery from last year's slack time, caused by falling sales on early products before the new 8086 line really got going, says Jackson, there will be hefty management changes. A clutch of new board members are being recruited, the most recent being LSI Logic's Wilf Corrigan, like Jackson an expatriate Britun made good in California.

Jackson himself is to step aside from direct control of the company. A new president – a good marketer from the computer industry says Jackson – will take over the running of the company.

"We will start acting like a billion dollar company, start taking the risks needed," he adds.

Prism flies up-market with Wren

by John Riley

SINCLAIR microcomputer distributor Prism Technology Holdings is moving up the low end business micro market with the launch of its own Wren eight-bit portable micro.

DENTON . . . "Largest" claims.

Designed in the UK by Transam Components and built by Thorn-EMI, the Wren offers a built-in modem to link with viewdata systems. It is built around a Z80 processor, has 64 Kbytes RAM expandable to 256 Kbytes, a 7in screen and weighs in at 20lb. With four software packages it will cost £1,000.

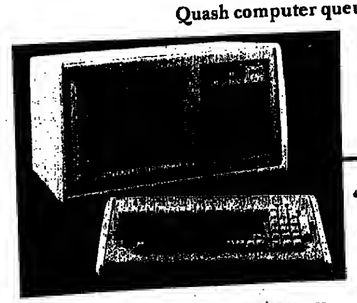
Prism has also extended its position in the home computer market by taking on the sole UK distributorship for US company Androbot's "personal robots". The smaller of these, which sells for £200, can be controlled by BBC, Commodore 64 and Spectrum micros using software implemented and sold by Prism.

The foundation of Prism's expansion has been its distributorship of Sinclair micros. "We are the largest distributor in the UK and sold one-third of a million units in 16 months," says Prism managing director, Bob Denton.

This is ridiculous!

Don't put your customers in this position by selling PCs to businesses that are liable to grow.
We all know that a business might *start* by buying a computer with one job in mind, but it seldom stays that way. If it's bought for accounting, they'll soon get the idea of adding financial planning, word processing and numerous other applications.
In a business that's growing that means more and more people will want to use the computer, eventually at the same time. And if you've sold them a PC they can't.
On the other hand, if you'd sold them an Equinox multi-user multi-processor system at the start, they could have expanded as the need arose.

Quash computer queues with Equinox



Equator. One of the best self-contained, multi-user, multi-processor systems available. Built to very high standards, it comes in 8 and 16 bit versions variously running CP/M 80™, CP/M 86™, MS DOS™, MBOS™, and the exceptionally powerful TURBOdos™ operating system.

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COMPANY NEWS

Norsk profits double to £6.3m

NORWAY'S premier computer company chose London as the location to announce its annual results last week.

Norsk Data, arguably the most impressive indigenous compoter company in Europe, has reported pre-tax profits of 93% at £6.3 million on tornover ahead 42% at £77.7 million, based on unaodited figures for the year ending December 31, 1983 (converted at NOK 11.2/£1).

The company has improved its profit margins to 15.5%, which brings it closer to its American competitors, and is quite exceptional for a Norwegian company.

Rolf Skar, president and chief executive officer of Norsk Data, said in London: "It is no secret that we are very proud of our growth rate – it is an enormous internal driving force, and it provides a lot of challenge and motivation."

But Skar added: "What is more important is the position of bookings."

Orders received in 1983 rose 65% to £87.5 million. At the moment, the company's business splits 50-50 between scientific and commercial machines, though the highest growth is the commercial field. Aboot 60% of its revenues came from exports.

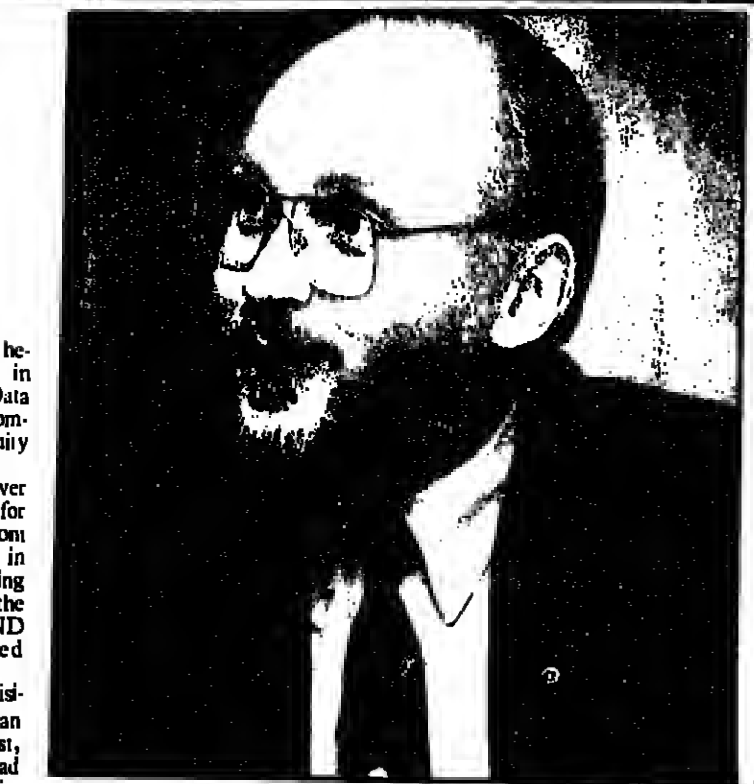
In the UK, Norsk Data managed a 100% improvement in turnover to oround £5 million. It is in the process of estoblishing a UK and central European headquarters at Benham Park, Newbury, and it is rumoured to be close to a joint venture with another UK company.

It is significant that Skar should choose to announce the results in London, because the company charts its flowering from 1981 when it became the first Norwegian company to have n London Stock Exchange listing.

In May 1983, the company began trading over-the-counter in New York, making Norsk Data the only European computer company with nccess to the US equity capital marker.

Both the profit and turnover figures include contributions for the second half of the year from Norsk Data's two acquisitions in 1983. In July, it took a controlling interest in o bureau serving the Swedish forestry indostry, ND Silvdata, which contributed around £4 million revenue.

Norsk also completed its acquisition of the loss-making German mini-maker ond CAD specialist, Dietz. Norsk Data Dietz had turnover of £8 million, but its profits were modest and dragged down the company's overall margins. Norsk views the Dietz project as central to its ambitions in German-speaking countries.



SKAR . . . "No secret that we are very proud of our growth."

Skar concluded that Norsk Data "hod never been in a better position". It had not doubted its ability to produce technically competitive products, but now he had the marketing ability and financial influence to take a "major role" in the European market place.

New system for small firms

DAVID Trippier, the minister responsible for small businesses, has announced that companies seeking government contracts will in future be required to fill one standard questionnaire.

At present, companies must sopply different financial and general information every time they pitch for business. Now suppliers to one department tendering to another for the first time, will merely have to refer purchasing staff to their original form.

The new procedure should be introduced by Jone.

SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

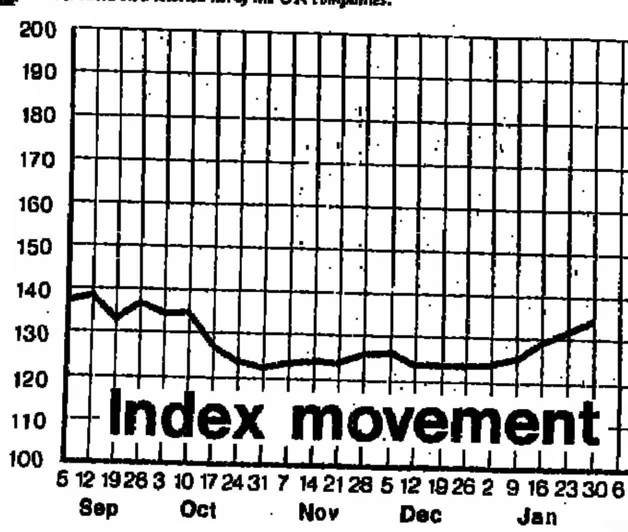
Previous published index 126.83 2/2/84 — Index 134.11 — Change +2.08

Pence 1984 High	Pence 1984 Low	London Stock Exchange Stock	Pence Price	Pence C'nge
326	308	Abingworth (10p)	328	+ 8
655	610	ACI (Ana Com) (25p)	655	+ 45
458	442	Atlantic Comp (10p)	445	- 13
70	68	B Bay Kens (25p)	69	-
171	159	Chubb (20p)	163	- 0
144	140	Cole Group (25p)	140	-
450	415	CASE (20p)	430	- 10
290	283	DPCE (5p)	200	- 10
215	200	Datastream (5p)	210	+ 5
625	560	De La Rue (25p)	625	+ 10
510	433	Ertel (25p)	500	- 10
688	632	Ferranti (50p)	660	- 28
196	177	GEC (5p)	192	- 7
69	61	ICL (25p)	68	+ 4
45	39	Kalamazoo (10p)	45	-
255	240	Kode Int (25p)	258	+ 18
298	280	Logica (10p)	298	+ 5
283	260	Memec (10p)	283	-
166	148	Muirhead (25p)	148	- 8
493	477	N'market (1981) ($0 05)	490	- 12
2783	2488	Norsk Data	2712	- 51
190	186	Office & Elect (25p)	188	-
1131	1050	Philips Lamp (F1 10)	1078	+ 26
234	232	Plessey (25p)	234	+ 1
35	30	Quest Auto (10p)	35	+ 5
216	195	Racal Elect (25p)	196	- 1
270	246	Star Comp (10p)	270	+ 25
560	540	Systems Des (10p)	560	-
240	236	Telemetrix (5p)	240	+ 2
676	642	Thorn-EMI (25p)	663	+ 11
131	135	UCST (50p)	125	-
230	208	United Leasing (20p)	230	+ 2
		Unlisted Securities		
137	127	Acorn (1p)	130	- 7
78	78	Sun Comp (10p)	78	-
150	120	CPU (5p)	150	+ 13
120	103	Cifer (10p)	103	- 2
620	585	Consub (C&F) (10p)	620	+ 30
258	252	Feedback (10p)	252	-
117	110	Imm Bus Sys (10p)	110	- 8
82	76	Intec (10p)	78	- 2
245	232	Int'Europe Tech (20p)	245	+ 6
35	30	J S D. (5p)	30	- 4
103	85	M M T. (5p)	103	-
240	238	Memory Comp (IR10p)	240	-
280	266	Micro Bus (10p)	276	- 8
640	610	Micro Focus (10p)	640	-
470	375	Microgen (10p)	470	+ 30
220	214	Miles 33 (10p)	220	-
68	23	Mnemos (10p)	66	+ 8
212	187	NMW (£1)	212	+ 12
235	215	Real Time (5p)	230	+ 5
183	138	Rolfe & Nolan (10p)	183	+ 9
86	75	ScanData (10p)	78	-
60	40	Trident Comp (10p)	60	-
127	118	Zygal Dyn (5p)	136	- 2

$ 1984 High	$ 1984 Low	US Stock	$ Price	$ C'nge
20¼	18¼	Amdahl	18¼	- 2
29¾	27½	Apple Inc	27½	- 1¼
38¼	35	Auto Data Pro	36½	- 1¾
52¾	50	Burroughs	52¼	+ ¾
9½	7	Comp Auto	8	- ½
21	20	Comp Sciences	20	- 1
13¼	10½	Comshare	10½	- 1¼
48	46	Control Data	47¼	- ¾
67¾	61½	Cray Research	61½	- 5½
48	38½	Data General	48	-
25	23½	Datapoint	23½	- 3½
88¾	73½	Digital Equip	88½	- 2¼
34½	31¾	Elec Data Sys	31¼	- ¾
13½	10¾	Gen Automation	12¼	- 1
35¼	32½	Gould	34	- 1¼
42	38¾	Harris	41¼	- ¾
45	41	Hewlett-Packard	41	- 4
132½	118¼	Honeywell	118¼	- 10¾
41¼	36¼	Intel	36¼	- 3¼
124	114½	IBM	114½	- 4¼
70¾	64¾	Litton Ind.	64¾	- 5
16½	14¾	MDS (Mohawk D)	14¾	- 1¾
28¼	19½	MSA (Mgmnt Sci)	19½	- 1¼
23	17¾	Mngmnt Assist	21	+ 1¼
9½	8	Modular	8¼	- ¾
136¼	123¼	Motorola	123¼	- 1¼
10½	18¼	National Semi	18¼	- 2
128¾	118¾	NCR	118¾	- 9
30	28	Perkin-Elmer	28	- 2
20¾	18	Prime	18	- 1¾
47¾	44	Raytheon	48½	- 2½
34½	29¾	Signal	29¾	- 1¾
48½	47	Sperry Comp	47	- 1¼
14½	12½	Storage Tech	12½	- 1½
40	33¾	Tandem	33¾	- 3¼
40¼	30¼	Tandy	38¼	- 1¾
141¾	134½	Texas Inst	134½	- 4
21¼	20¼	Tymshare	20¼	- ¾
38½	30½	Wang Lab B	30½	- 4
11¼	10¾	Wyly	11¼	+ ½

Pence High	Pence Low	New Issues	Pence Price	Pence C'nge
82	76	Dataserv (5c)	36	- 4
166	166	Perkom (10p) USM	166	+ 3

The table shows the closing prices in London on Friday and in America on Wednesday and the changes from the previous table. Highs and Lows have been adjusted where necessary. The Share Index is based on a selected list of the UK companies.



Bull begins to pick up

by Jack Gee

BULL, the state-owned French computer group, halved its losses and increased turnover by about one fifth in 1983 at the atart of a three-year effort to improve management, develop new products and capture fresh markets, chairman Jacques Stern anoounced in Paris last week.

Based on 1982 sales of Fr8.13 billion, and losses of Fr1.35 billion, sales in 1983 would be Fr9.76 billion and losses would drop to Fr675 million.

Stern claimed that the confideoce of both the 21,000-strong workforce and the customer base had been regained abroad and in France. But he said the company could not expect to produce a profit until 1986. Actual figures for 1983 are not due to be published until June.

Claiming that his re-structuring programme had "profoundly modified Bull's performaoce", Stern said he was now "reasonably optimistic" about its future.

Stern's personal record at the head of SESA, one of France's leading software companies, has provided an excellent testimonial for bringing Bull back from the brink of bankruptcy. Stern, who is 51, was appointed by President Francois Mitterrand 18 months ago.

Since then, the name of the company, CII-Honeywell Bull, has been shortened to Bull following the reducion in the atake of Honeywell Information Systema from 49% to 8%. This was achieved by a Honeywell decision to reduce its inveatment to just under 20%. Last year, the French government injected Fr1.56 million fresh capital, and Honeywell's atake shrunk to only 8%.

"We asked Honeywell if it would like to help us with new capital," said Stern . . . "But they gave a negative reply. Our performance is not an encouragement to them to put up more money."

Stern added: "But when Bull becomes a healthier venture, we hope Honeywell will join us in raising fresh capital."

However, Stern claima that technical co-operation by Bull with Honeywell is aa vigorous as ever.

Stern's report that he has halved his company's lossea over the past year follows a 28% rise in sales for the first half of 1983. He had also forecast a 40% improvement in salea for the entire year.

Stern's big problem is that, under state control, Bull cannot undertake the improvements in productivity and prune its staff as dictated by the logic of the firm's predicament.

It carries a cumbersome product range aod it cannot shed these without losing its traditional custom base.

STERN . . . "Confidence."

Fading Apple pins faith on big Mac

IF there was ever any doubt about the significance of Macintosh for the Apple Computer, the company's dismal first financial report of 1984 will have dispelled it.

In the three months to December 1983, net profits crashed 75% from the same quarter in 1982 to $5.8 million. Revenues in the period rose 48% to $316.2 million. The net figure includes a $1.4 million after-tax gain from the settlement of its copyright infringement suit against Franklin Computer.

The company attributed the poor performance to increased development and marketing coats, and price cuts on the Apple II.

Apple's chairman, Steve Jobs, introducing Macintosh, said that Apple will spend more than $50 million on advertising personal computers in 1984. So the company's fragile margins look set to worsen before they get better.

Apple, so long the darling of investors on the New York over-the-counter market, fell from grace spectacularly last September when it reported the first reversal in financial growth in its industry.

Apple is clearly in need of a new revenue earner. President John Sculley says: "1984 will be such an important year that there will be little opportunity for error."

US firm saves Irlandus

by Philip Hunter

IRLANDUS, maker of printed circuit boards and based near Belfast, has been rescued from the brink with a £500,000 takeover by the Californian computer group Data Design.

The company had been in receivership since June 28, 1983.

"The outlook didn't look that good and it didn't seem a lot of people were interested," admits Steven Gunning of Price Waterhouse, the official receivers.

But Data Design stepped in with a last minute bid, which means that Irlandus survives intact, and the 130 remaining staff keep their jobs.

More than this, Data Design plans to invest £5 million, including an unspecified grant from the Northern Ireland Industrial Development Board, to re-equip the plant, and hopes to bring the workforce up to 230 by December this year.

Irlandus lost £200,000 in 1981 and even more in 1982, partly because it got locked up in unprofitable sub-contracta for other companies, according to Gunning.

But Data Design plans to make the company profitable by turning it into a high-volume producer of multi-layer printed circuit boards. Data Design says it hopes to increase turnover seven-fold to £30 million in the next five years, with a 10% profit.

Data Design chooses Northern Ireland for its European expansion, "because there is an existing facility large enough for volume work, which is our forte in the States", says a spokesman.

Maintenance firm meets with success

DPCE, the computer maintenance company and one of the more successful new issues in 1983, has reported healthy interim figures.

In the six months ended December 31, 1983, pre-tax profits rose 58% to £822,000 on turnover up 37% at £3.4 million.

DPCE chairman Colin Clive says that the UK operating company continuea to be the major contributor, but that the Dutch affiliated firm was now performing satisfactorily.

Clive says that DPCE continued to win additional business from existing clients and to attract new customers.

Harrison scraps third of workforce

A TOTAL of 43 of the 130 staff at Harrison Industrial Development, the holding company for H.H. Microcomputers, have been made redundant. H.H. went into receivership two weeks ago. William Roberts, the receiver from Ernst & Whinney, tells us that there have been approaches for the microcomputer business, but that any deal will be at least a month away.

Radius acquires

RADIUS, a software house based in Hull, has acquired the data products division of Geest Computer Services, DPD, for an undisclosed sum. Radius says that DPD was one of the UK's first suppliers of Texas Instruments, and it describes the move as a strengthening of its commitment to this company. DPD is based in Birmingham, and it gives Radius a foot in the Midlands. This is the second acquisition that Radius has made in six months – the other was Hyman Computer Services of Manchester.

Xyllyx success

XYLLYX, a viewdata product company, is set to join the Unlisted Securities Market next month. Anglo Dutch and Kemp Mitchell are expected to place 3.5 million shares, about 17% of the equity, to raise £2 million for the company. The cash will go towards research and development and working capital. Xyllyx's products include a coin-operated terminal for public access to viewdata systems, which it picked up when Information Services and Equipment, a National Enterprise Board outfit, fell over. There are no pricing details yet – though estimates of a placing price as low as 60 pence do not disguise the fact that this is one for the brave.

AB extension

All Electronic Products, which was awarded a contract to supply printed circuit board sub-assemblies for the IBM Personal Computer last December, and does subcontracted work for Acorn, is enlarging its facilities in South Wales. The decision could mean 200 new jobs at the Rogerstone and Puntypridd sites. Construction work has started to extend the two Welsh Development Agency factories at Rogerstone into a 100,000 square foot complex.

Ferranti closure

FERRANTI has announced closure of its loss-making, container-handling equipment division in Chadderton, Lancs. The move will mean 330 redundancies, and will cost Ferranti aboot £1.5 million. Ferranti Container Handling has lost some £5 million over the past five years. The closure could mark Ferranti's withdrawal from traditional heavy engineering industries.

Compass created

TECHNOLOGY Solutions of Reading has formed a new company, Compass Computer, based at Tetbury, Gloucestershire. The company will offer add-ons, such as communications boards, and peripherals for DEC machines from Rainbow to the micro PDP-11. Compass will also market a multi-user micro system – the Compass 32.

Quorum query

QUORUM Computers of Southampton, which has just sold 35% of its equity to Moracrest Investments (*Computer Weekly*, January 12), has announced that its workforce has halved since 1981, not since the management buyout from QI Europe last year. The company also is curious to know if Sinclair Research really intends to call the local area network for the new QL, QLAN. Quorum has a registered system with the same name.

COMPANY NEWS

DEC lives through its crisis . . .

RARELY can a mere second quarter's financial result have been awaited with such curiosity as DEC's last week.

In the end the company survived its moment of truth and was able to confirm modest recovery after its disastrous first quarter return.

DEC announced net earnings for the quarter ended December 31, 1983 up 32% at $80.48 million on revenues ahead 40% at $1.42 billion. That has helped DEC post half-year interim earnings down just 18% at $96.3 million on revenues up 28% at $2.5 billion compared with the first half of 1982.

So DEC con breathe again. But one quarter "doth not a summer make", and there remains significant scepticism about whether the company is out of the woods yet.

DEC's share price collapsed last October – to a year low of $64 – when the company reported profits down 72% in the fiscal quarter ended September 30. It has come bock around 15% in the last few weeks as the recovery was promised, and eventually materialised, but it is hard to take DEC's founder and president Ken Olsen seriously when he declares that "we've never been stronger."

Certainly, the company has solved some of its more pressing problems. A spokesman for DEC in Maynard, Massachusetts, told us: "The problems of the last few months are behind us – a lot of things happened all together and exaggerated the situation." He added thot "the improvement has come becouse the personal computer shipments have picked up substantially; there is significant demand for the Micro PDP-11, and for Vax 11-780s and 11-750s. We will be making aggressive product announcements for the rest of the year."

Nonetheless, DEC still has a lot of catching up to do before its personal computer business will be taken seriously. It faces o growing challenge in its traditional minicomputer market from a host of super mini makers – Dota General, Prime, Norsk Data, Perkin-Elmer – all of which can offer machines to out perform DEC's range. The new generotion of Vax is more thon two years late, and DEC desperately needs to produce it later this year.

Similarly, no corporation, including DEC, can shrug off the loss of an estimated 50 product line managers, and six senior vice-presidents, in less than one year.

DEC shares must look like a bargain now, at 75 against o 1983 high of 130, yet Wall Street analysts still seem reluctant to commit themselves to the stock. They are relieved that DEC has come back so far so soon – but they remain to be convinced.

OLSEN . . . *Hard to believe.*

HENSON . . . *Unrepentant.*

. . . and the rest have mixed fortunes

WHILE DEC was heaving a sigh of no little relief there was mixed fortune for the rest of the bunch.

Burroughs' recovery continues – it has now managed a major turn around in 12 months.

For the full year to December 31, 1983 net profits rose 67% to $196.9 million. Turnover improved marginally, up 4% at $4.39 billion. In the fourth quarter it turned a $15.6 million loss a year ago, to an $81.4 million profit. Turnover rose 17% in the period to $1.31 billion.

Michoel Blumenthol, Burroughs' chairman, has taken the company to pieces and put it back together since his arrival in 1980.

Blumenthol said that ordera in all the major product groups "strengthened in the fourth quarter, with both our domestic and international operations achieving substantial gains."

The same cannot be said for Prime. Its fourth quarter profits fell 18% on the same period in 1982 to $10 million, despite a 21% rise in turnover to $142.8 million.

For the full year the mini-maker saw net profits down 28% at $32.5 million on turnover up 18% at $516.5 million.

Prime president Joe Henson was unrepentant, claiming that the figures belied "aubatantial progreas" in terms of revenue growth and expense management.

Gould's 1983 figures tell a similar story. The company reported static earnings of $79.2 million on sales up from $1.25 billion to $1.32 billion. But the group recorded a loss from discontinued activities which haa depressed the net profits to juat $64.1 million.

However, fourth quarter earnings rose 22% to $25.2 million on sales up 10% at $342.3 million.

And mixed fortunes for Control Data. Improvement in computer related business was offset by fall in earnings from financial services.

In the full year net cornings increased from $155.1 million to $161.7 million on sales up from $4.3 billion to $4.6 billion.

Microgen seeks full listing

MICROGEN HOLDINGS, which specialises in high-speed data recording, and which joined the Unlisted Securities Market last year, is seeking a foll Stock Exchange listing.

The announcement has put icing on an already rich cake. Microgen has just reported pre-tax profits up 57% at £926,000 on rorover ahead 27% at £3.51 million for the year to October 31 1983.

Patrick Barbuor, chairman of the company, says that a thorough productivity drive has produced a significant improvement in margins and profits. The company seems to have estsblished computer output microfilm as a viable product ond looks for a substantial growth in the market.

This year should see a healthy contribution from Systemser, a computer-aided photo typesetting business acquired in 1983.

Microgen was brought to the USM by broker Laurence Prust in January 1983 in a placing of just 10% of its equity. Its progress to a full listing was described by one company spokesman as "very, very quick."

Microgen's shares opened at 190 pence, and although they have tended to fluctuate, they now stand at around 430p. In fact, Microgen's performance made it the sixth best new USM issue in 1983.

The current price capitalises the company at some £14 million and givea it an historic price/earnings ratio of over 30 – a function of its high-tech tag, as much as anything else.

Microgen's performance suggests that it can indeed justify promotion to the official list. The company is looking for profits around £1.5 million in the current year. Its name has been linked with National Westminster's computer output microfilm subsidiary.

One high-technology company that has made the transition from USM to full listing safely is Star Computer Group.

The company has reported pre-tax profits up from £232,000 to £320,000 on turnover increased from £2.22 million to £3.12 million in the six months to October 31.

Last year, Star returned pre-tax profits of £1.07 million, and the company points out that it invariably has o slow first-half. It says that the order book looks good ond that Star shoold manage o similar improvement for the full year.

Star is to launch a new range of microcomputers, based on the Convergent Technology NGen and Megaframe workstations.

■ **Financial editor Dave Madden comments:**
The Unlisted Securities Market was conceived in 1980 in response to the Wilson Committee's criticisms of the City for its failure to encourage small companies.

Since it was inaugurated in November 1980, some 200 companiea have gone onto the market – raising over £700 million. Despite the casualties – including Io Technology – the fact that the USM has still to prove its stability in a falling market, and the talk of a shake-out, the USM has fulfilled that role with conspicuous success.

But the USM was not designed to be an end in itself. Its ultimate raison d'etre is to act as nursery for the full market.

So Microgen's decision to apply for a full listing will be all the more significant if it encourages other USM companies to make the transition.

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PROFILE

Man who made a micro spectacle in the City

IT comes as a surprise to hear Clive Richards, the ubiquitous and impressively self-assured chairman of Micro Business Systems, call anyone God – even his bank manager. But that's exactly what he called Richard Cole-Hamilton, chief general manager of the Clydesdale Group, and the man who formally opened Micro Business Systems' new Scottish headquarters in Glasgow.

It's a surprise because the imposing Richards almost epitomises the wheeling-dealing pin-striped suited City slickers.

by Dave Madden

There's nothing ordinary about the man – or his office. In a city not famed for its elegance, MBS has found itself an immaculate Georgian town house – once Glasgow's Burlington Banqueting Centre – at a mere £70,000.

MBS has good reason to "belong" to Glasgow. Its largest single customer – the identity is guarded jealously – is in Scotland. And as Richards comments: "The Clydesdale Bank has the good sense to lend us £1 million".

If, as tradition has it, Scots are careful with their money, then they can be well pleased with that investment: Micro Business Systems was one of the most spectacular performers on the Unlisted Securities Market in 1983, with a 150% gain on its share price.

But MBS was hardly a long shot. Richards' pedigree is legend: variously managing partner of stock jobbers Wedd Durlacher Mordaunt, chief executive of Rothschild Investment Trust, and group finance director of NM Rothschild & Sons, chairman of Norric Hill and owner Clive Richards & Co, an investment company.

With Mike Brooke, managing director of MBS, whom he met at Wedd Durlacher in the 1960s, he started Datasolve, now part of Thorn-EMI.

In 1977 the pair set up Micro Business Systems. They turned down a £150,000 loan from the Clydesdale in 1978, but a year later they needed £1 million and, as Richards explains: "We wouldn't be where we are now without their support."

So where is Micro Business Systems? Well, the company is arguably the largest distributor of microcomputers in the country. It has three offices acting as IBM authorised dealers – in Windsor, the City and now in Glasgow. In the last 12 months its Microtex subsidiary, which handles Altos machines, has taken off with sales of £500,000 in December alone. It has established three new divisions: MBS Personal Computers, MBS Soft, and a separate microcomputer training school; and it has flexed its new-found equity muscle with the acquisition of DEC systems house Alveronic.

But the event that has had the most significant effect on the company took place at the end of 1982. Brokers Simon & Coates, one of the more energetic sponsors of high tech companies, brought Micro Business Systems to the Unlisted Securities Market in November 1982, placing 26.5% of its equity at 120p per share. They now stand at around 275p, and MBS is capitalised at £40 million.

The placing raised some £1.8 million, of which £800,000 went to repay debts, though subsequently the company has taken out a much bigger loan – and Brooke claims to have made a mere £5,000 out of the affair.

As far as Richards and Brooke are concerned, "going public" has proved an unmitigated success.

RICHARDS (left) with the man he calls God – Richard Cole-Hamilton.

Richards says: "Corporations have a deep suspicion of private companies. The USM has been a financial success and it has brought respect".

A recent report commissioned by accountants Spicer and Pegler, entitled The USM Experience, suggested much the same. Almost all USM companies it approached said that status and prestige was the most valuable advantage of becoming a public company.

This business of credibility is a subject that Richards and Brooke warm to. They explain that when approaching a corporation they find themselves "selling to a purchasing department rather than an office manager – a 'purchasocrat', not a technocrat – who will ask not only if we will be around in five years time, but whether our suppliers are stable too".

If MBS has won kudos from its Unlisted Securities Market Listing, then how much more prestigious would be a full Stock Exchange listing. After all, that is what the USM was designed for – to act as a seed bed. And Richards does not rule out the possibility.

The prospect of MBS applying for a full listing may become clearer when its 1983 results are announced. In the six months to the end of June 1983 MBS reported pre-tax profits up 130% at £874,000, on turnover up 150% at £6.8 million. The year closed on December 31 and MBS is giving nothing away. "We are in purdah", said Richards, "but no one will be dissatisfied."

The other attraction of public company status is that it makes raising money easier. And in November MBS took full advantage of that, buying Hull-based DEC authorised distributor Alveronic for £3.6 million, with a new issue of MBS shares.

If the company has a priority for 1984 it is to consolidate the progress it has made since venturing on to the USM.

"We intend to capitalise on the investments made in 1983, which with Alveronic, the regional office development, and the new divisions adds up to a lot of money" says Richards.

But that does not exclude opening another regional office in the spring – or applying for IBM dealership for it.

PLATFORM

The human system that no one can ignore

WHEN computers first came into the commercial scene in the early 1960s, payroll was an obvious candidate as the first system for computerisation.

The processing speed, power of calculation and the general administrative capabilities of computers ensured that the payroll would be processed easily in an accurate and timely way.

In some cases, a small amount of personnel recording was also carried out within this type of system, but there development stopped, so that computers could be used for more "interesting" functions such as ledger accounting, stock control, manufacturing, financial planning and asset control.

But we are now beginning to see the first fundamental change in payroll and personnel since these early days.

It is called human resource management, and it is going to change so much in the field of payroll and personnel management over the next few years that no organisation can afford to ignore its impact.

At present only the very largest of commercial organisations have paid any attention to this topic, but shortly it will have to be addressed in all organisations.

As organisations slim their workforces a need to keep the right people is important. It is also necessary to ensure that the manpower is kept in line with the manpower budget.

More and more the management of organisations require details and statistics of their workforce so that correct investment decisions can be made and a proper control maintained on costs. In many organisations the labour cost is of the order of two-thirds of the total cost which demands proper manpower cost control.

These and many other reasons have resulted in a need for much more effective management of human resources.

The impact of statutory sick pay (SSP) has necessitated closer cooperation between payroll and personnel departments, both jealous of their own responsibility and often at loggerheads.

All this has resulted in the evolution of human resource management systems of which payroll is just one important element of a total system. It has also resulted in the evolution of combined payroll/personnel departments in forward-looking organisations.

The natural trend, therefore, is to an integrated payroll and personnel system, where common information is held only once.

This evolution is not going to take place without trauma and pain. Payroll staff will have to control a much wider content of information, personnel staff are going to have to understand the importance of timeliness of processing, and both are going to have to come to grips with the more modern aspects of computerisation.

Despite this statutory trend, there is increased awareness that employers need to know more about their employees. In current jargon this is human resource management.

The primary function can be described by the phrase "position control". Ostensibly it is the manpower budget, and a single record must be established for each budgeted position.

It can, however, be expanded by setting out the criteria of what the holder of the position must have, such as educational qualifications, skills, relevant experience and so on.

From this we can extend into manpower planning which is matching up the ideal with the actual – where there are vacant or over-budget positions, where individuals are out of specification, the costs of these exceptional situations, where there are budgeted positions which are no longer relevant, how we can make the workforce more efficient and, finally, by matching vacant positions with suitable individuals in the organisation.

Tim Southern and Dick Osborne

Tim Southern is managing director and Dick Osborne is product manager, Human Resources of the Payroll/Personnel Division of Package Programs Ltd

DOWNTIME

Insecurely ditched

WHILE our government struggles with desperate remedies to seal its own leaks and wring out the wets, it is clear that West Germany has its own problems.

Had you taken a stroll last October in the Eifel mountains you might not have taken any notice of a thick wad of computer print out lying in a ditch.

But had you bothered to peruse, you might have been taken aback by the contents. It listed the West German armaments programme in its virtual entirety.

The German *Stern* magazine reported the find, but refrained from divulging the beans.

According to *Stern*, it was not clear whether the lists had been lost during transport, or placed in the ditch by a secret agent.

The burning question on our lips is: did the agent belong to a trade union?

Silicon Newspeak isn't all well

BEWARE of the insidious spread of (mostly Silicon Valley) Orwellian Newspeak throughout 1984. Examples: "We're on a learning curve" means "we don't know what the hell we're doing"; "we're adding functionality" means "we don't know how the hell to do it"; "we're in an open-ended timeframe" means "we don't know when the hell we'll finish"; and "we've got a revolving credit package" really means "we're going bust".

Des. res. in heart of the City

WHEN the Swedish company LM Ericsson took over Datasaab, one of the things its UK subsidiary found it had inherited was a small building in the heart of the City of London.

The size of a small terraced house, the building has just one room on each of its three floors. Ericsson managing director, John Bunce, said he didn't know what to do with it at first, but it has turned out to be a useful little City base, which provides a small office, a demonstration room and a sitting room or bar. Handy for meeting prospective customers informally.

It also happens to be right across the street from British Telecom's head office.

Bunce didn't say whether this proximity had anything to do with the fact that Ericsson was the first company to get BT approval for its teletex terminal, despite being a foreign company and ineligible for the government subsidised teletex promotion scheme.

Nice, but . . .

SEEN one of those natty new telephone plugs yet? You know, the little flat ones designed to replace the cumbersome old jack plugs that BT has been using since about 57BC. Nice aren't they? Pity they're illegal.

It appears that someone managed to cock up the draft for the new British standard for the things. The EEC has decided that any voltage over 50 is a jolly bad thing to allow people to come into contact with, and demands that any new electrical gizmos must be made secure from probing human extremities.

Enter the British Standard Finger. This mythical digit exists for the sole purpose of judging whether or not electrical gubbins are likely to give one a nasty shock. If the British Standard Finger won't go into any of the holes, the thing is deemed safe.

Trouble is, the wording on the British Standard for the new Telecom connector omits the word "standard". Thus *any* finger attached to a British subject will do.

This, of course, covers British subjects aged from 0 upwards, many of which have British fingers perfectly capable of fitting into the new connectors. The thing is, therefore, illegal until such time as the standard is changed. And that could take some time.

Chad

PUZZLER

TWO men, X and Y, play a single set of tennis under the usual match conditions, with the service passing to the opponent after each game is completed, and X wins by six games to three. The set is unusual in that five of the games go against the "serve". Given this information – that the serving player was successful only four times out of nine – you are asked to determine which man served first. See page 79 for solution.

10 YEARS AGO

FROM COMPUTER WEEKLY OF JANUARY 31, 1974: For the first time registered membership of the British Computer Society would soon be over 20,000, it was reported . . . Thomas Watson jnr retired from active management of IBM. He had been chairman and chief executive since 1956 . . . The International Centre for Computing in Secondary Education was formed, with headquarters in Edinburgh . . . A high-speed analogue to digital converter with integral eight-way output multiplexer was developed by Cambridge Consultants for the Ministry of Defence . . . Panic buying and hoarding of computer stationery by some installations resulted in a warning from the Business Equipment Trade Association that such measures were the cause of shortages.

Liveware File

by Don

ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, February 2, 1984

These are just cosmetic touches

THE Data Protection Bill shows all the signs of being a salutory lesson to the UK computer industry on its need to have an effective and coherent voice in the corridors of power.

Widespread opposition remains within the industry to the Bill as it currently stands at the end of its second reading in the House of Commons. That opposition has been increasing since it was just a twinkle in a Home Office Minister's eye, and a White Paper was first tabled in the House. The Bill, however, grinds relentlessly on with a few cosmetic touches slapped on to allay criticism.

As to the Bill's possible effectiveness in preserving the liberties of individuals, it is difficult for anyone to seriously consider it as anything other than a legal device to allow the government to ratify its signature on the European Convention which relates to data protection.

And there are reasonable doubts that it will accomplish even this limited aim.

But, under the general rule that government and its attendant bureaucracy will do as much harm as it can get away with and as much good as it must, the Bill can and probably will have a significant effect on the computer industry.

The Bill was supposed to be designed for the computer industry. When then Home Secretary William Whitelaw announced in 1981 that the government intended to ratify the European Convention, he made it clear that the main impetus for the move was commercial.

The government wished simply to make sure that UK bureaux and database providers were not cut off from Europe by a failure of the UK to comply with various laws passed by EEC countries which limited the flow of data across national borders.

Providers of this sort of service must be crossing their fingers and hoping that the government fulfills its intentions.

The rest of the industry will have another set of regulations to obey, probably at some cost, in complying with the yet to be announced standard of security of personal information.

Small systems houses could find that their activities are limited just by waiting to gain approval from the registrar for the security systems that they intend to implement for their customers. Large companies will have the resources and time to go through the lengthy procedures which will probably be erected – small ones are likely to have great difficulties.

These are problems that the industry may have to face. It would have been better had they been more widely discussed by Whitehall legislation drafters and MPs.

DoTI must listen

THE government has acted quickly to answer criticisms that its microcomputers in schools scheme is floundering for lack of software and support. The Department of Trade and Industry is to announce in March that it will back a multi-million pound scheme to develop educational software.

In our January 12 issue we criticised the government for short-changing the teaching profession by offering it equipment, but not the know-how of how to use it. Now it seems that the DoTI is going to act quickly to rectify the anomalies in the scheme. Although it is unlikely that the DoTI has reacted to our concern with the scheme's problems, we nevertheless applaud their prompt action.

The details of the DoTI's support for software in secondary schools are not yet known, and it is important that they are scrutinised carefully when released.

Hopes have been expressed that the UK could become a world leader in educational software. That will only happen if the DoTI listens carefully to what teachers say their needs are, and to what the software industry says it can do to supply those needs.

The newly organised DoTI, with its new emphasis on export markets, must not let this opportunity go begging.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Les Mercer of Farnborough, Hants, who wins £5.

Rewriting history via back numbers of *The Times*, for instance, today would be a simple matter of hitching up a word processor to a microfiche.

Keith Waterhouse, *Daily Mirror*

LETTERS

Think again, you Transbasic Challenge critics

JUDGING from the recent correspondence in your columns regarding the Computer Automation Transbasic Challenge, and reading between the lines of the opinions expressed, my guess is that poor Messrs. Pilkington and Seymour have had a shot at it and come up against some of the more common problems which occur when trying to implement multi-user applications on unsuitable systems.

Far from our competition being treated with "derision", as Mr Seymour thinks, everyone who has taken up the challenge, and there has been a far greater response than we ever expected, has entered into the spirit of the competition in a most positive way.

It is unfair to the contestants who have expended time, effort and a lot of ingenuity in rising to the challenge for Mr Seymour to suggest that they are wasting their time.

All the contestants have shown a great appreciation of the whole problem and an ability to resolve difficulties in an inventive way, which contrasts markedly with the negative criticisms expressed in your columns.

Our contestants, in fact, are mostly from commercial organisations having to earn their crust of bread by programming, which they clearly do with a high level of ability. We have also been encouraged by the strength of the agreement with the article *Computer Weekly* published as background to the competition.

Since the entrants have had the nous to interpret the problem in a thoroughly practical way, it is unnecessary to provide a blow-by-blow rebuttal of the points raised in your columns. Only three general points need be made to deal with them.

It is quite clear that the flowchart represents only a simple example of the basic functions needed to be performed in a real system. A real life application would include a large amount of user directives, messages and help information, field and data type validation etc., but however necessary this is to the application, it does not exemplify any further functionality needed in a multi-user environment than is included already.

Any designer worth his salt knows that the amount of code needed for dealing with error recovery and invalid input far outweighs that needed to implement the central function when everything is OK. This is as true of single user systems, as multi-user systems and adds nothing to the problem as set.

When drawing up the flowchart, we recognised that different languages and systems would probably enable some function boxes to be concentrated into single statements. This would result in an obvious advantage for that language, and be reflected in the score. The object of the exercise is, after all, to win!

Also, if Mr Pilkington's system needs to change all the data on the screen to change just one field, perhaps he would like to try using Opus and Transbasic which does not. It also, incidentally, does check for validity of numeric fields.

We do accept that we may be at fault here in believing that this last requirement was so fundamental to a usable language, that it was not necessary to put in explicit checks.

Lastly, on the subject of record locking, great care has to be exercised here. In a real time, multiprogramming operation system which locks files at the record level, it could be possible for requests for disc access to be enqueued (or de-queued) in a different order from that in which the requests were issued.

It is therefore more reliable for the disc driver to unlock the record after the transfer has taken place successfully, rather than leaving the responsibility for releasing the record in the hands of the application program.

Some systems also leave the responsibility of locking the record in the first place to the disc drivers, locking it at the initiation of the read-access to the record, as well as unlocking it only after the write-access is successfully completed.

In conclusion, I would like to thank our competition entrants for their excellent responses, invite Mr Pilkington, Mr Seymour and Mr Higham to visit us (or one of our distributors) for a hands-on session with Omnix, and look forward to the difficult task of finding a winner for the presentation of the prize in a few weeks' time.

ROGER CHARTERS
Marketing manager
Computer Automation
Rickmansworth.

An offer to teachers

I AM a regular reader of *Computer Weekly* and I have been impressed during the last year that you have reacted well to the impact of microcomputers in the market place.

I was particularly pleased to see the article by John Kavanagh (January 12) and your editorial concerning the problem facing teachers of how a first-time user can use microcomputers.

It is a problem we are very familiar with and for those, like teachers, who naturally cannot afford the normal commercial costs of lecturer-based training, we provide a whole range of low-cost computer-based training software.

Comprising a manual and a set of discs packages exist to teach micros, operating systems, languages and application systems (like word processing and spreadsheets). For as little as £60, every teacher in a school or member of a department coud be trained.

S. E. HELMS
Principal Consultant
BIS Applied Systems
London.

Comparing apples with apples

IN your report of our interim results you stated that the change in our accounting policy relating to corporation tax was aggressive and "this sort of manoeuvre gives leasing a bad name."

Your observations are a little unfair. First, since our stock market flotation, Exposure Draft 33 of the Accounting Standards Board has been published.

Secondly, there has been considerable comment by the respected financial press as to whether valuation of companies on the basis of notional corporation tax payments is still appropriate. Perhaps of still more relevance is the fact that we have fallen into line with the established industry practice which is not just limited to computer leasing companies.

If analysts are to value our company properly, it is better that they compare apples with apples rather than each company claiming it is a special case.

ASHLEY H. MITCHELL
Managing Director
United Leasing
London.

Governments must take the blame

YOUR note by John Kavanagh about the "New Blood" scheme (*Computer Weekly*, January 12) misses one very important point.

It is true that some of the blame for the present lack of younger members of staff in university research lies with the expansion in the 1960s.

However, a more important factor has been the consistent and demoralising attack on universities from successive governments over the last 10 years or more.

The "New Blood" scheme is a cosmetic one, designed to disguise the serious damage done not only to the career structure in universities over this period but also to the research carried out in university departments. Such research is vital, not least in information technology, for this country's future.

It cannot, however, be carried out in a climate where for many years, university departments simply did not know what budgets they were working to until well into the financial year, making financial planning impossible, and where imposed financial limits may still mean that any post which becomes vacant has to be frozen.

There is no guarantee that "New Blood" entrants will have any chance of permanent university posts at the end of their five-year contracts.

The continual repression by government of university salaries has also been a prime reason why other employers are easily able to make more attractive offers to prospective university researchers. Salaries for comparable jobs at comparable levels of responsibility command salaries 20-50% higher in industry than in universities.

Until there is a real, as opposed to simulated, change in attitude on the part of the government towards universities, there will continue to be little incentive for young researchers.

DR ANTHONY D. LAW
London.

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USER SURVEY 1983

Cobol slithers from its peak

Use of Cobol has declined according to the 1983 user survey. John Riley examines this and other important results

COBOL is still the dominant primary programming language used on mainframe and minicomputer sites, but it has fallen from its peak of 1982 and may have started on a long-term decline. Meanwhile, the use of Basic has increased among mainframe and mini users, use of Assembler and PL/1 is more common on mainframes, and use of Fortran is slightly up on last year in the minicomputer sector.

These findings arise from the 1983 *Computer Weekly*/Datapro user satisfaction survey – the largest survey so far.

IBM's own languages have mixed fortunes in the mainframe section

The questionnaire asked users to state their primary programming language, sources of their applications programs and the principal applications to which their systems are put. By comparing the results with those of previous years, it has been possible to pick out general trends in these areas.

Nearly 66% of the 819 mainframe user respondents use Cobol as their primary programming language. It has fallen from its peak of 71% in 1982, which was 3% up on the 68% of mainframe user replies in 1981.

It is possible that this result could mark the beginning of the decline of Cobol, which has been widely predicted to begin during the latter part of this decade onwards by various software gurus, including James Martin, chairman of international consultant DMW.

The overall percentage shift is heavily influenced by the 396 IBM mainframe users who responded. In the 1983 survey 55% regard Cobol as their primary programming language, whereas in 1982 and 1981 the proportion was 61% and 53% respectively.

The shortfall in the use of Cobol in IBM mainframe establishments is counterbalanced by increased proportions of users reporting that Assembler and IBM's own programming language, PL/1, are their primary languages. There is a 5% increase in PL/1 (to 18.5%) and a 10% increase in Assembler (to 15.2%) use.

The shift to Assembler by IBM mainframe users perplexes John Grant, chairman of the IBM Computer Users Association. "The result for PL/1 could be explained, but the Assembler result amazes me," he says, "that is very strange." He adds that IBM has not particularly pushed PL/1 over the past year.

One company that has its future tied up with that of Cobol is Micro Focus. Among other offerings, it provides Personal Cobol, which enables IBM PC users to write Cobol programs for IBM mainframes.

Peter Hewitt, Micro Focus' UK marketing manager, says that the number of installations is growing, giving an overall real increase in the number of Cobol users.

Fewer Sperry and Honeywell mainframe users say they are employing Cobol as their primary programming language this time. However, while Cobol's use on Honeywell installations remains very high (nearly 89%), there is a 13% drop in the number of Sperry sites using it (to nearly 68%).

Cobol remains popular with ICL users (nearly 84% of them), while 15% more of the NCR and Burroughs users report using it compared with the last survey.

IBM's own languages, PL/1 and RPG have mixed fortunes in the mainframe section. Reported PL/1 use grows overall: it is the predominant language for 10.2% of respondents this time, compared with 6.9% last survey. That growth is mainly due to increased use by IBM and IBM plug compatible users.

However, RPG use on mainframes declines for the third successive year: from 3.2% in 1981 to 2.2% in 1982 and now to 0.6% in 1983.

Assembler and Basic are both increasing in use on mainframe sites, according to the survey. The percentage of respondents using Assembler as their main language has increased for the third year running, from 6.1% in 1981, to 7.2% in 1982, to 10.4% in 1983. Basic is enjoying increasing take-up, although its use is still on a small scale – up to 3.1% from 1.3% overall. Basic is especially more widely used on ICL mainframes, with 8.4% of ICL's 196 respondents using it as their chief language, compared with 2.4% last time.

The scientifically-oriented language, Fortran, is down slightly among mainframe users this year. That trend may be linked with the slight decrease in scientific and mathematical applications reported by mainframe users.

Turning to the minicomputer and small business systems section of the survey, Cobol again dominates, although slightly down overall (from 32.4% to 31.2%). The biggest drops in use are found among Honeywell, Data General and Prime users, although Cobol's use on IBM minicomputers nearly doubles to 8.7%.

From the survey, the use of Cobol is particularly high among NCR and Burroughs users. There has also been a big increase in Hewlett-Packard users using Cobol as their primary programming language, perhaps reflecting its push deeper into the commercial market.

In the minicomputer and small business sector, IBM's language, RPG, is down overall for the third year running from 20.8% in 1981 and 19.6% in 1982, to 16.1% this time. The decline in use of RPG among IBM users in this sector seems to be accelerating – from 96.4% in 1981, to 93.3% in 1982, to 85% last year.

The proportion of RPG use at Hewlett-Packard, Honeywell and ICL minicomputer sites has also dropped. Wang is the exception, for 23.5% of the Wang user respondents use RPG as their main language (although the Wang sample is small). This result is particularly significant in view of Wang's aggressive attempts to make inroads into the upgrade market for the ageing IBM System 34.

The use of Basic on minicomputer installations is up slightly overall. Although more DEC and Systime users employ Basic as their main language than any other manufacturer's users, the proportion using Basic is down. More IBM, ICL, Hewlett-Packard, Honeywell and Data General users are going for Basic, according to the survey.

The use of Fortran as the primary language for minicomputers is also up slightly, from 9.9% to 13.0% overall. That can probably be linked to the increased use of minicomputers primarily for engineering, scientific and statistical applications (Figure 5). Fortran is most likely to be the main language on DEC, GEC and Prime minicomputer sites, according to the survey.

The use of Fortran as primary language for minicomputers is up slightly

There is a small increase in the proportion of languages not singled out in the tables in the minicomputer section. Among these languages, Pascal gains a little ground, from 0.5% in 1982 to 2.0% last year, mainly due to its use on a handful of ICL, Norsk Data, Perkin-Elmer, Prime, DEC, Honeywell and GEC sites. APL is the main language for 1.5% of Prime users.

Users were asked to list the main sources of their applications programs. In both sectors there is a continued boom in the proportion of users purchasing proprietary software packages (Figure 2). The main source overall is once again from in-house personnel, and the proportions are up on last year.

There is mixed news for contract programmers. They are being taken on by more mainframe installations (up from 32.7% in 1982 to 34.3% in 1983), but by fewer minicomputer and small business systems ones (down from 35.9% in 1982 to 30.2% in 1983).

Looking at the main applications of users' equipment, accounting is still the most common application, although, overall, that application is down in both sectors. Payroll and personnel functions are the second most frequent application areas for mainframes, but, among minicomputer users, payroll and personnel take third place after order processing and inventory control.

Accounting is still the most common application, although down in both sectors

The main increase in mainframe applications is in the banking sector (up from 14.3% in 1982 to 21.9%). In the minicomputer section the largest increase is in engineering and scientific applications (from 13.7% to 22.0%).

Datapro will publish the complete results of the survey in a report, entitled British User Ratings of Computer Systems. Copies of the report, at 62 Swiss francs each, may be ordered from Datapro Services S.A., CH-1164, Buchillon, Switzerland.

■ CTL was included in the mainframe section by Datapro in this survey, although it is normally considered as a minicomputer vendor. In the interests of statistical consistency it was decided to keep CTL in that section.

Most users need their equipment for accounting applications – although this number is down.

THE 1983 *Computer Weekly*/Datapro user satisfaction survey was the largest of the annual surveys so far. There were 2,064 user responses, of which 819 were mainframe users and 1,245 were minicomputer users. As the same questions were asked in previous years, the 1983 responses can legitimately be compared with those from the previous surveys.

The user survey, which involved sending detailed questionnaires last September to a random sample of 10,000 UK mainframe and minicomputer installations, was divided broadly into two parts. Last week, we looked at the first – at users' satisfaction with their mainframe and minicomputer systems.

This week, we examine the second part of the survey, which asked users how they are working their systems.

Manufacturer	Assembler 1983	Assembler (1982)	Basic 1983	Basic (1982)	Cobol 1983	Cobol (1982)	Fortran 1983	Fortran (1982)	RPG 1983	RPG (1982)	Other 1983	Other (1982)
Burroughs	0.0	(0.0)	0.0	(0.0)	93.6	(94.4)	0.0	(0.0)	0.0	(0.0)	6.5	(5.6)
Data General	2.3	(0.0)	27.9	(21.9)	53.5	(70.6)	9.3	(34.4)	0.0	(0.0)	7.0	(3.1)
Datapoint	10.0	(0.0)	0.0	(0.0)	10.0	(9.1)	5.0	(0.0)	0.0	(18.2)	75.0	(72.7)
DEC	4.0	(5.0)	31.4	(41.6)	4.6	(5.0)	23.1	(20.8)	0.0	(0.0)	36.9	(27.7)
GEC	0.0	(0.0)	2.6	(25.0)	5.1	(0.0)	30.8	(50.0)	0.0	(0.0)	59.0	(25.0)
Hewlett-Packard	1.7	(0.0)	5.1	(3.0)	79.7	(48.5)	1.7	(27.3)	3.4	(6.1)	11.9	(12.1)
Honeywell	2.9	(0.0)	11.8	(0.0)	52.0	(92.9)	16.7	(0.0)	3.9	(7.1)	13.7	(0.0)
IBM	0.4	(0.0)	2.6	(1.0)	8.7	(4.8)	0.9	(0.0)	85.1	(93.3)	2.2	(1.0)
ICL	12.3	(18.6)	4.3	(1.0)	62.6	(62.9)	0.5	(0.0)	9.5	(13.4)	10.9	(4.1)
Microdata	2.9	(–)	74.3	(–)	2.9	(–)	0.0	(–)	0.0	(–)	20.0	(–)
NCR	0.0	(0.0)	3.6	(0.0)	96.4	(100.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Perkin-Elmer	20.0	(0.0)	5.0	(0.0)	30.0	(75.0)	25.0	(0.0)	0.0	(0.0)	15.0	(0.0)
Prime	7.7	(0.0)	4.6	(5.6)	15.4	(38.9)	61.5	(55.6)	0.0	(0.0)	10.8	(0.0)
Systime	1.9	(0.0)	75.5	(88.9)	7.6	(0.0)	9.4	(0.0)	0.0	(0.0)	5.7	(11.2)
Texas Instruments	10.0	(9.1)	0.0	(0.0)	75.0	(72.7)	10.0	(0.0)	0.0	(9.1)	5.0	(9.1)
Wang	0.0	(0.0)	23.5	(0.0)	52.9	(100.0)	0.0	(0.0)	23.5	(0.0)	0.0	(0.0)
Others	11.1	(10.2)	27.8	(18.0)	27.8	(11.9)	16.7	(12.9)	0.0	(4.9)	16.7	59.8
Total (1245 responses)	4.81	(5.6)	16.7	(15.9)	31.2	(32.4)	13.0	(9.9)	16.1	((19.6)	18.2	(11.6)

Figure 1: Primary programming languages – minicomputers and small business systems.

Sources	Mainframes 1983	Mainframes [1982]	Mainframes (1981)	Minicomputers & SBCs 1983	Minicomputers & SBCs [1982]	Minicomputers & SBCs (1981)
In-house personnel	95.9%	[95.3%]	(97.4%)	82.1%	[75.7%]	(75.8%)
"Ready-made" programs from the manufacturer	50.3%	[51.4%]	(35.6%)	42.6%	[40.4%]	(33.6%)
Proprietary software packages	53.2%	[52.6%]	(46.8%)	38.6%	[35.9%]	(33.5%)
Contract programming	34.3%	[32.7%]	(29.8%)	30.2%	[35.9%]	(33.5%)
Manufacturer's personnel	8.7%	[9.7%]	(9.0%)	7.0%	[6.3%]	(7.4%)

Figure 2: Principal sources of application programs.

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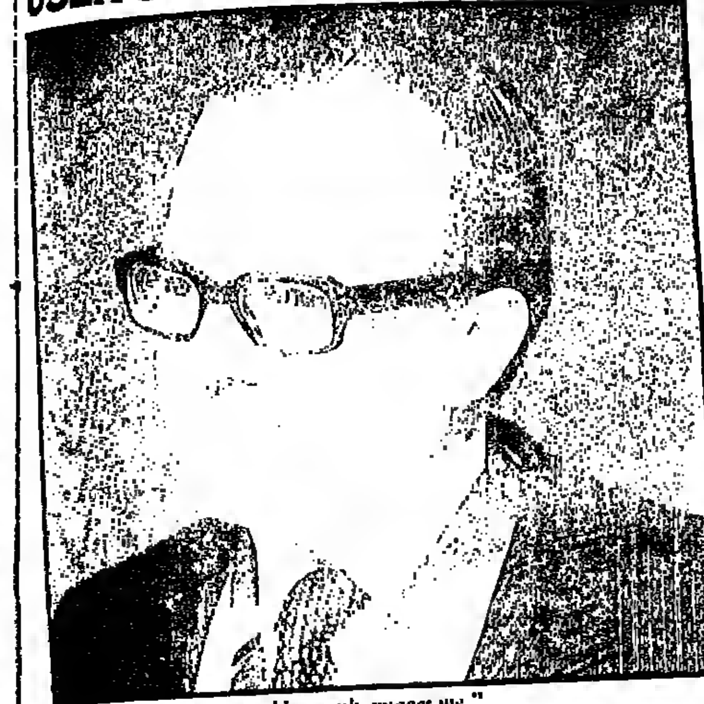
USER SURVEY 1983



GRANT . . . "The Assembler result amazes me."

Manufacturer	Assembler 1983	Assembler (1982)	Basic 1983	Basic (1982)	Cobol 1983	Cobol (1982)	Fortran 1983	Fortran (1982)	PL/1 1983	PL/1 (1982)	RPG 1983	RPG (1982)	Other 1983	Other (1982)
Amdahl	27.3	(0.0)	0.0	(0.0)	27.3	(28.6)	13.6	(28.6)	18.2	(42.9)	0.0	(0.0)	13.6	(33.3)
Burroughs	0.0	(0.0)	2.2	(0.0)	82.2	(66.7)	2.2	(11.1)	0.0	(0.0)	4.4	(11.1)	8.9	(11.1)
CTL	5.6	(0.0)	5.6	(0.0)	77.8	(100.0)	5.6	(0.0)	0.0	(0.0)	0.0	(0.0)	5.7	(0.0)
DEC	7.1	(0.0)	14.3	(20.0)	14.3	(0.0)	35.7	(80.0)	0.0	(0.0)	0.0	(0.0)	28.6	(0.0)
Honeywell	0.0	(0.0)	3.7	(0.0)	88.9	(96.3)	3.7	(3.7)	1.9	(0.0)	0.0	(0.0)	1.9	(0.0)
IBM	15.2	(4.7)	0.9	(0.0)	54.8	(61.2)	4.6	(3.1)	18.5	(13.2)	0.0	(3.1)	6.0	(4.7)
ICL	0.8	(0.0)	8.4	(2.4)	83.6	(83.1)	4.6	(4.8)	0.0	(1.2)	0.0	(1.2)	2.5	(7.2)
NAS	30.8	(–)	0.0	(–)	23.1	(–)	7.7	(–)	38.5	(–)	0.0	(–)	0.0	(–)
NCR	0.0	(0.0)	0.0	(0.0)	85.7	(71.4)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	14.3	(28.6)
Sperry	24.6	(14.3)	0.0	(0.0)	67.7	(81.0)	1.5	(0.0)	0.0	(0.0)	6.2	(4.7)	0.0	(0.0)
Others	0.0	(4.0)	0.0	(4.0)	57.1	(72.0)	14.3	(12.0)	28.6	(4.0)	0.0	(0.0)	0.0	(4.0)
Total (819 responses)	10.4	(7.2)	3.1	(1.3)	65.6	(70.9)	5.0	(5.9)	10.2	(6.9)	0.6	(2.2)	2.7	(5.6)

Figure 4: Primary programming languages – mainframes. Percentages of users employing each language.

Application	Mainframes 1983 (Sample: 819)	Mainframes (1982) (Sample: 321)	Minicomputers/SBCs 1983 (Sample: 1245)	Minicomputers/SBCs (1982) (Sample: 633)
Accounting	72.7%	(78.8%)	56.8%	(72.5%)
Payroll/personnel	59.3%	(62.0%)	38.3%	(44.9%)
Order processing/inventory control	49.9%	(55.8%)	45.5%	(57.7%)
Sales/distribution	37.9%	(40.8%)	32.6%	(42.7%)
Purchasing	36.1%	(39.8%)	31.6%	(41.7%)
Manufacturing	23.6%	(28.0%)	22.0%	(24.2%)
Other	26.9%	(24.9%)	26.7%	(28.3%)
Engineering/scientific	21.4%	(23.4%)	22.0%	(13.7%)
Mathematics/statistics	21.0%	(23.4%)	17.3%	(13.1%)
Banking	21.9%	(14.3%)	9.7%	(7.4%)

Figure 5: Principal applications of users' equipment.

Name of manufacturer	User responses (minimum of 10) 1983	(1982)
MAINFRAMES		
Amdahl	17	(7)
Burroughs	35	(9)
CTL	14	(5)
Digital Equipment	12	(5)
Honeywell	50	(27)
IBM	396	(130)
ICL	196	(83)
NCR	20	(14)
NAS	10	(–)
Sperry	61	(21)
Others	8	(25)
Total Sample Sizes	819	(321)
MINICOMPUTERS AND SMALL BUSINESS SYSTEMS		
Burroughs	59	(37)
Data General	39	(32)
Datapoint	18	(12)
DEC	271	(101)
GEC	29	(4)
Hewlett-Packard	90	(33)
Honeywell	56	(28)
IBM	216	(104)
ICL	189	(98)
Microdata	32	(–)
NCR	25	(14)
Perkin-Elmer	17	(4)
Prime	56	(18)
Systime	43	(18)
Texas Instruments	15	(11)
Wang	14	(7)
Others	76	(90)
Total Sample Sizes	1245	(633)

Fig. 3: Number of participants in the survey.

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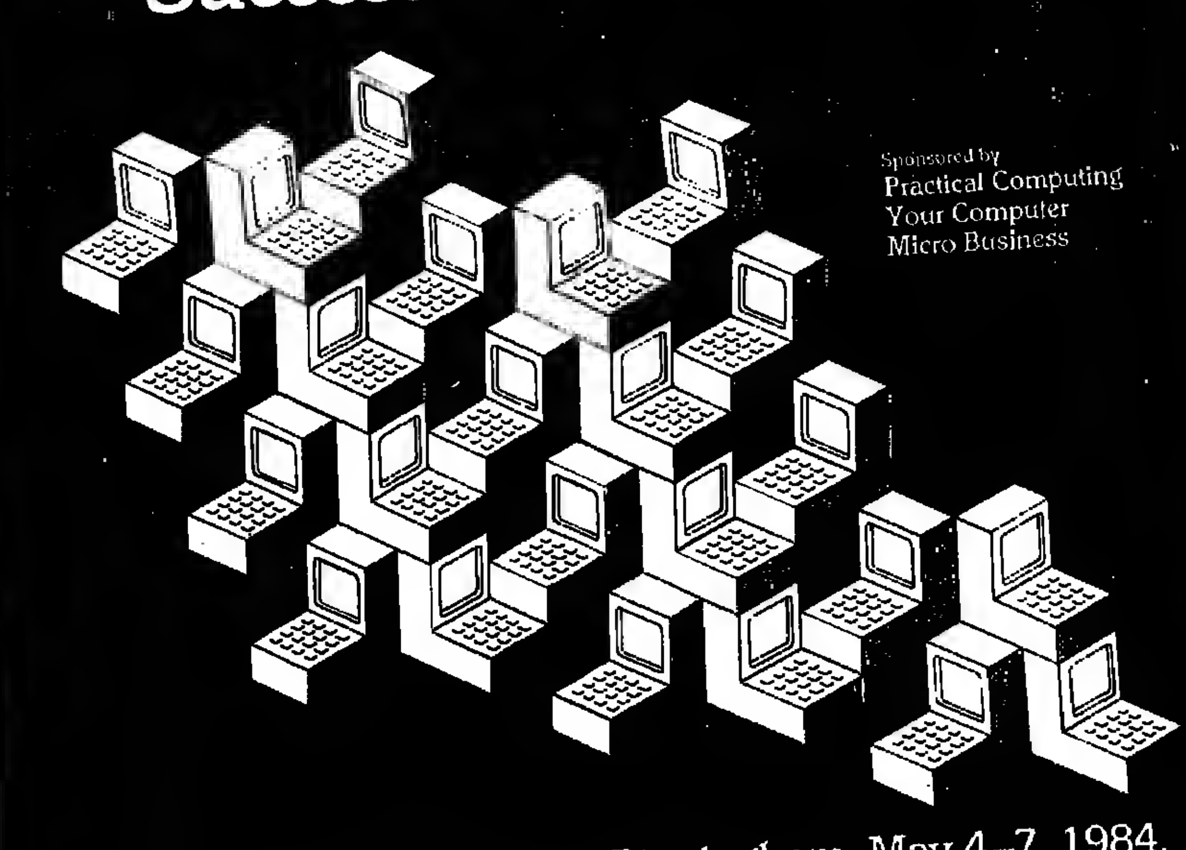

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RESEARCH

Down-to-earth academics tempt the purse-strings

Funding for research comes readily to those projects with commercial potential, as David Casey finds out

TO DESCRIBE a scientist as an academic a generation ago was to recognise his commitment to research in a teaching environment, free from the pressures of commercialism. In the most materialistic world of 1984, that same label is more often applied scathingly to a researcher whose activities have little prospect of commercial exploitation – a potential drain on resources which are already stretched by public spending cuts.

Central government funding currently provides 80% of finance consumed by postgraduate research in our universities. To say that the British taxpayer must see an equitable return on the investment would be to deny any broader educational role for these establishments in our society.

Barclays has invested in university projects as a commitment to "social responsibility"

Political overtones apart, for Whitehall to intervene in the allocation of finance to universities would permit an unacceptable degree of state control in research. The present Secretary of State at the Department of Education and Science, Sir Keith Joseph, readily agrees that the system of funding this sector through the University Grants Committee (UGC) is the most acceptable approach. There is even a commendable degree of detachment shown by otherwise controversial local authorities, which control the bulk of finance reaching the polytechnics.

Like its paymaster, the UGC is quick to delegate responsibility for postgraduate research. It operates by grant-aiding the universities. Funds available each year seem to be allocated on a completely arbitrary basis – in practice, however, the committee claims it takes several factors into account before announcing the grant to each university.

But what those factors are, and the extent to which they influence the size of the grant, is not revealed. It is admitted that the technological requirements of each establishment have a bearing; how far the previous track record of a university in productive research influences the committee must be a matter for conjecture.

Such circumspection on the part of a body disbursing public research funds is regrettable. Greater disclosure of the criteria could help the universities structure their programmes in applied technology to a pattern coordinated by the committee. Far from imposing authoritarian control, such an approach would ensure that research projects of national importance were funded, and that there was still a fair allocation of money for more rarified "pure" research.

With the system as it is, however, pitched battles rage within the universities for most of the academic year, while it is decided how the grants are to be divided between competing interests. In an environment where personalities have greater influence on the outcome than the merits of their case might deserve, an undue proportion of the funds available for research may be directed into strictly "academic" channels.

One factor which does not seem to have a bearing on UGC deliberations is the amount of money received each year from the specialised research councils and charitable institutions. The Science and Engineering Research Council (SERC) includes computing and its applications in its responsibilities. With a total of £200 million worth of research grants outstanding in March 1983, SERC funds research in areas as diverse as polymer engineering and aspects of archaeology.

The funds committed at that time to information technology and Alvey programme subjects stood at £26.7 million – a 13% slice of the SERC research cake.

Rather more open about its activities than the UGC, SERC states among its objectives "identifying and supporting areas of special importance, particularly where the national interest is concerned" and the training of graduates in areas of science and engineering which are of importance to British industry.

With its selection criteria drawing on these objectives, the council recommended just over 2,100 projects in the last financial year. The support approved was £84 million; a total of 4,600 applications had been made for £228 million. Information engineering projects supported by the council took the lion's share of the funding – accounting for only 10% of the total number of grants, this sector was awarded 20% of the funds.

Compared with the total resources of SERC and its counterparts in agriculture and medicine, the ability of the charitable institutions to finance research is miniscule. But institutions like the Wolfson Foundation, with its Technology Scheme, do have an important role in higher education.

Dr Leonard Rotherham, a former vice-chancellor of Bath University, is adviser to the Wolfson trustees on grants. He explains that there is no particular bias towards computer hardware or software. "The fund covers any branch of science, provided that the research can eventually be applied to an industrial application," he says. "This definition may be widely interpreted, but at the end of the third year of a project, we would expect the research to have yielded some positive advantage."

In 1983, the trustees made a total of 19 grants from the fund – the largest was £180,000 for a materials science study – and Dr Rotherham expects around the same number to be awarded this year.

The spread of disciplines supported under the Wolfson Technology Scheme is broad, but computer-related projects have received their fair share. The University College of North Wales at Bangor, for example, was able to develop software for the optimisation of circuit design – inherently theoretical, but with direct commercial applications.

One of the organisations well placed to fund that critical stage is Investors In Industry (3i), the new incarnation of the Finance For Industry group, which includes ICFC and is jointly owned by the Bank of England and the UK clearing banks. Its Technical Development Capital (TDC) subsidiary – re-styled 3i Ventures – is the arm that invests in commercially viable projects, taking them from development to production and beyond.

Since 1980, the company has been headed by Geoff Taylor, whose experience as a senior manager in US and British computer industries spans 20 years.

Taylor explains that supporting research is not a prime objective of 3i Ventures. "3i Ventures gets involved when the research has reached the stage where it needs to be developed into a product. We would not expect to start a relationship by funding research, but in any high technology operation the research has to continue in parallel with production."

Where a project has strong commercial potential at the research stage – a "seed investment", as Taylor describes it – the funding provided can be well under £100,000. "But we would not consider working on such a small scale unless there was the prospect of investing at least a quarter of a million. In all our ventures we are looking towards the longer term."

Investments are equity stakes, with the 3i operation taking a substantial minority shareholding.

Taylor rejects the idea that any directors appointed are custodians of the investment. "We often take a seat on the board, but it is certainly not to control the business. We go in as a partner to contribute to the thinking – and the doing – in the venture. By hiring staff with extensive experience of business and industry for 3i Ventures, we are able to do more nurturing than monitoring."

The clearing bank parents of the 3i consortium are casting their own net over technology. Barclays, for example, has invested heavily in university projects as a commitment to "social responsibility". Research is being funded at Durham into flexible manufacturing – extending the use of robotics in manufacturing – while at Kent, money has been found for a biotechnology unit.

On the Science Park at Warwick, the bank has built a £1 million "incubator" site for small high technology companies; a venture due to be opened by the Prime Minister later this month.

JOSEPH . . . Agrees funding through UGC is most acceptable approach.

Perhaps the most significant of the projects funded from this source is the Barclays chair of microcomputer applications in industry at Manchester – a £250,000 endowment originally provided to finance a professorship and two research fellows.

The incumbent, Professor Frank Sumner, explains that one project had been commercialised and had helped the unit expand to 10 staff without eroding the capital of the endowment. "Vuman, a company wholly owned by the university, has a £750,000 turnover from the VuWriter scientific word processing developed here in the department."

Ian Duffell, manager of Barclays' high technology team, is encouraged by the work in the universities. But he believes that the bank should not be funding pure research in the commercial sector. "It is not what the depositors expect from a clearing bank. Our expertise lies more in providing the range of financial support beyond the research phase, with venture capital where appropriate from the merchant bank, leasing companies and the bank's development capital fund."

Duffell does not accept that Barclays is only dabbling in high technology. "Our total investment in this sector now exceeds £1 billion – as much as the bank's commitment to agriculture."

Developing its role as a catalyst in the funding of high technology, Barclays is sponsoring Techmart at the NEC from February 21 to 25. The 120 exhibitors hope to attract visitors prepared to license developments or help their research progress to production.

One person likely to take the opportunity provided by Techmart to meet the higher education sector is Dr John Waller, who co-ordinates relations between the universities and the British Technology Group. BTG, the umbrella for the old National Research and Development Corporation (NRDC) and National Enterprise Board, invests between £2 million and £3 million a year in about 100 university projects.

Dr Waller explains that, because few university staff have a background in marketing, the preferred route is to license the development to an established British company. He sees software ventures as the main exception, however. "There are many examples where academics can do very well."

And the price of BTG support? There is an equity stake of up to 25% – which the group will hope to sell at a profit in a reasonable time scale – and the assignment of patent or licensing rights to BTG.

David Casey is a freelance journalist.

TAYLOR . . . "We often take a seat on the board, but it is certainly not to control the business."

RESEARCH

Pinning down the airy-fairy

Man machine interface has no concrete definition or limits. Judith Morris finds out how research is dealing with it

WHEN Brian Oakley was asked about the four areas which the Alvey directorate had specified for research, he described man machine interfaces as the Cinderella of the four.

And, indeed, when compared with solid specific subjects like software engineering and VLSI, the problem of man machine interface does begin to sound a little airy-fairy.

All pervasive, covering all aspects of a company's business, spread throughout a firm's operations or a university's disciplines, requiring and touching upon diverse skills from psychology to mathematics – in fact, meaning all things to all men – the area is as difficult to define as it is to limit.

Plessey's Chris Barrow has been seconded to the Department of Trade and Industry to head the Alvey team on man machine interface. Why Barrow? His answer to that question expresses many of the problems he has to face.

"My interest was really in telecommunications," he explains, "and then I became interested in office automation, where the user interface is all-important. Man machine interface is a fairly specialised field, but it does cover a lot of skills. No one person can expect to have experience of the whole field: image processing, for example, is very different from dialogue.

Complex products are now getting into the hands of non-professionals

"I have had a very wide experience," he adds, "which qualifies me as well as anyone to look into this problem."

So what is the problem? Immediately, it is to define the area and to try and bring the different aspects and applications of it together.

"Some of the areas mapped out for funding," says Barrow, "such as VLSI, for example, which is a very 'high profile' area – are more obvious than others.

"Man machine interface is not a high profile area, but it does cover absolutely everything we create in the information technology field. It is not easy to bring it all together.

"For example, there is no part of the university scene which covers it. The Applied Psychology Unit at Cambridge is doing work on it and computer science departments up and down the country are looking into it, but it is an inter-disciplinary subject."

Because there is no university or company which has an office with the words "man machine interface" on the door, the Alvey group under Barrow's direction is having to start more or less from scratch.

At the moment, a large number of people are involved in the study at many different levels. Like the other topic areas picked out by Alvey, the directors will be making strategies and producing a document on the subject.

To do this, the group has had to call for help from over 200 people in industry, academia and government departments.

Three areas have already been defined; human interfaces, focussing on interactive interfaces from the human to the machine; pattern analysis, which will include image and speech processing; and some display work.

Although the document makes reference to each of these areas, it does not expand on any of them. Starting this month, a series of workshops is to take place concentrating on the different areas involving 30 to 40 experts in the relevant fields.

The five workshops, which are residential and will each last for two days, are expected to produce concrete ideas for possible areas for research. Fairly short reference will be taken, says Barrow, and they will be expanded by the specialist groups to ensure covering all areas.

When the output from the groups is assimilated, probably by the beginning of March, some clear idea of research should have emerged. But it will be a daunting task, and if the process seems cumbersome and vague, then it is because it is necessarily so – the nature of the subject being what it is, and with 200 people from widely differing backgrounds and disciplines all itching to have their say.

One reason the interface is so important is that complex products are now getting into the hands of non-professionals. The rapid increase in the number of novices using or wanting to use a computer has made it in industry's interest to perfect a product which makes that easier.

One company which is trying to do just that is Iansyst, headed by Ian Litterick. With funding from the British Technology Group (BTG), Litterick has worked on a one-handed keyboard which is now at the prototype stage.

Litterick sees the product as being the basis for several ideas. "It was designed for a pocket computer with a flat fold-out screen," he says. "The brief was simply that they keyboard should be smaller in size than a paperback book, and that there should be a key for each letter like the Qwerty keyboard on a normal typewriter.

"It is easy to use and simple to learn, so there are really possible areas of use – either a company could simply use it as a keyboard and integrate it into other machines, or substitute it for a normal Qwerty keyboard for desk-top use, so that it takes up less space, and leaves room for a desk full of papers – making it really a tool among other tools."

Iansyst hopes to be "in close negotiations" with manufacturers over the next six months.

Other projects are more long-term.

At GEC, for example, Peter Collins wears two hats in his involvement with man machine interface work.

Collins concerns himself with speech and image processing but points out that all the product units within GEC are working on more short-term projects with a view to launching products within a year or two.

Much more so than other areas mapped out for Alvey funding, the ground for unifying the various disciplines touching on man machine interface must be laid before the Alvey directorate can proceed. In this way, the project will take longer and be more complex than probably any other begun under the present UK initiative.

Judith Morris is editor of Computer Talk.

BARROW . . . "I have had a very wide experience, which qualifies me as well as anyone."

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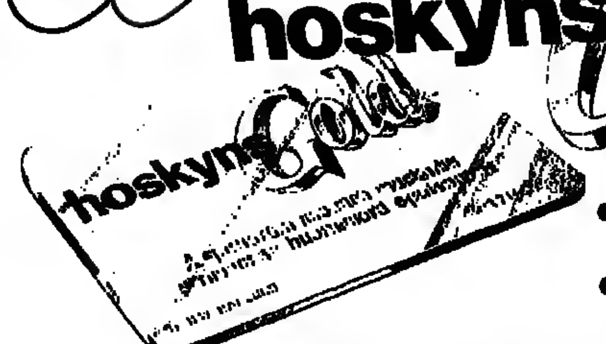

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RESEARCH

Support for microcircuit engineering operations previously funded by SERC may be reduced, warns Hedley Voysey

Alvey could stultify university work

TALBOT . . . "Advantages for UK in silicon design methods."

ONE of the ironies surrounding the creation of the Alvey Directorate is that it may stultify some areas of work within British universities. The simple reason is that the scale of funding for Alvey schedules of work will act to reduce the level of support for university operations in microcircuit engineering that would previously have been funded by the Science and Engineering Research Council.

Tracking developments in Very Large Scale Integration (VLSI) in the UK is difficult. On the one hand, some significant developments are revealed rather belatedly so as to avoid any possible reduction in their commercial advantage.

On the other hand, there is so much fragmentation of the UK development activity that many interesting pieces of study fail to be linked up with other work and so soon peter out in their impact.

There is also a perverse feeling of exhaustion among workers in the microcircuit engineering field. After striving to get the Alvey idea to the starting gate, it seems too much to expect an extended period of ideas to follow on immediately.

Just as the Alvey study arose from near-panic about Japanese expressions of intent, it seems that new UK ideas need prodding into circulation by US industrial achievements.

For instance, the MieroVax has emerged from Digital Equipment, and this has served to re-focus some attention in the UK on the design methods used to create the MieroVax.

Although there is nothing very startling about the methods used, it serves to remind UK firms that Digital Equipment chose contractually to exploit the services and products of Silicon Compilers Inc. Therefore, some industrial houses have taken a renewed interest in what is available in silicon compiling services here in the UK.

"Silicon compiling" is the rather informal term used amung design engineers to cover aspects of cuniputer-aided engineering in microcircuit logic design.

By analogy with classic program compilation, the aims of a complete silicon compiler are to start with functional descriptions of what the chip is to do, and by completing all the transformations involved automatically, to arrive at the end with a physical layout fur use via a particular chip-making process. This idealised view accounts fur the use of the term.

In practice, silicon compilers try to use the logic design habits of earlier technologies and help in the correct design of chips. Since there is a constant oeed to let the designer intervene in the chip design as basic constreints on what can be done emerge, the process of using a silicon compiler is a highly interactive one.

The real achievemeots in this field so far have enabled designers to detach themselves from detail which distracts them when making basic design decisions. At the same time, the design aids should give opportunities for fine tuning of designs to optimise final chip performance when this is essential.

Clearly, a silicon compiler used for gate array implementations is a different animal from one dealing with putting a volume microprocessor scheme on to a chip.

Although there are few comparable design tasks awaiting completion in the UK equivalent to the one faced by Digital Equipment (in creating the MicroVax), the route taken by Digital has served notice on many UK electronics firms that products are better designed in silicon these days than on printed circuit boards.

Bill Talbot, who once headed up engineering in ICL and who now consults as Talbot Technology, believes that "if appropriate methods are used, the advantages of designing to silicon can be considerable for many major UK enterprises".

The last year has seen some favourable light shone on the work of Lattice Logic of Edinburgh, which can be regarded as originating its design system from within Edinburgh University. Lattice Logic would not claim that it had produced a silicon compiler on a grand scale, but its methods do abstract designs to a degree.

The versatility of the system has been rather fully demonstrated by adapting the whole box of tricks to work with Ferranti's gate array processes, which are not at all like the processes for which it was originally built.

David Eglin of Lattice Logic has some warm words for the Ferranti chip-making system: "It enables both analogue and digital tricks to be combined and it can provide a quick way to evolve a new product to fill a market demand from within the UK instead of relying on imports."

Eglin does not think that the Ferranti process has yet reached the end of its life by quite a fair margin.

Although the whole business of gate array design is somewhat old hat, the fact remains that for many UK firms the logic that needs about 1,000 gates fills many of the needs that are not met by very large volume standard products.

The development required is the fastest possible turnround in prototyping the design at reasonable cost: a combination that may bore real researchers to tears, but it is hard to find today and it has significant effects on industrial competitiveness.

The splendid quality of work done at GEC is respected, but the more amazing things done with silicon-on-sapphire by GEC are mostly of use to the military for the moment. Although the same is not true of Plessey's gallop into gallium arsenide, because it has large scale potential in fibre-optic based digital transmission circuits and satellite communications systems, the fact remains that the media attention on the topic is unrelated to most industrial criteria.

Inmos suffers in the same way because its achievements are not exotic enough for the media. The achievement is worthy of note. It is a silicon house that has made the transition to complementary metal oxide silicon (CMOS) using a process which is akin to the Bell Laboratory development.

It is fairly obvious that Inmos cannot turn itself into a jobbing house to serve the custom design needs of the UK. However, it has plans to exploit its trendy design system to carry out semi-custom designs where volume is large.

The design goodies produced via the Inmos team may be just what the Alvey Directorate section working in VLSI under Dr Bill Fawcett is looking for, in at least some part of the project.

If the VLSI project is to have any meaning, there will need to be a breadth about its design systems, because what is needed to produce special signal processing answers to VLSI is not necessarily a design system which serves some other set of digital functions. There is still a need to blend the analogue and digital pieces of designs.

Real advances in silicon compiling methods are being made in our universities, but it is doubtful if these will be coerced in time to transform the design practices of most of the middle rank firms to beat overseas competition.

■ This research feature is continued on page 35.

Taking the whole span of work in the US into consideration, it leaves the impression that a fundamental change is taking place in design habits. As yet this is simply not true in the UK

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120,139 ABC JULY-DEC 1983.
129,335 SINGLE ISSUE AUDIT NOV 10th 1983.

PUBLICATION	CIRCULATION	SOURCE
Computer News	100,000	Computer News
Computer Weekly	97,226	ABC 1982 (last published) figure
Computing	110,920 124,635	ABC June/Dec '83 Spot Check 15th Dec '83

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A technical bent is a plus for those looking for a position . . . Steven Sonsino looks at the state of the market

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"Moog is so excited. He's just discovered packaging."

THE marketing and selling of computer equipment appears to present no problem in job creation. As with most areas of the industry there is a shortage of good skilled people.

Some areas, like selling peripherals, are so cut and thrust that huge sums have to be spent to push "name" products: so sales and marketing workforces are usually quite large here.

Traditionally, sales positions have been the less well paid of the two jobs, but there are perks, usually including company car, and sometimes substantial bonuses.

Marketing posts in many cases have become extremely creative, and some companies involve marketing personnel in designing products as well as in promoting them.

There are many routes into sales and marketing, not least from engineering or technical backgrounds. Sales staff who know how products work (and can show customers how they work) are valuable contacts for the customer – and quite valuable to a company, too.

It can also pay to be technically minded in marketing positions. Knowing the good and bad points of products is the first step towards knowing how to promote them.

As for marketing jobs in the computer industry, "the world's your oyster," says one marketing executive. "Computers are being used in every avenue of life and new markets are being developed everywhere."

The world needs an endless supply of people who understand the capabilities and failings of computers to sell and market them.

Within the peripheral business, marketing becomes a little more difficult, says Phil Mobsby, a marketing manager for Dataproducts in the UK. "You're marketing to the industry, not to the whole world," he says, and it can be difficult to organise volume shipments.

"In our company, we like sales and marketing people to be adaptable. We also like them to understand the history of the particular part of the industry they deal with," is his comment.

"Because the company is still fairly small in the UK, we need people with a little experience. We don't really have the facilities for training of the ICLs and DECs."

For smaller companies the computer industry is a "dogfight", he adds. "It's the survival of the fittest."

There is hope, though, for graduates and YOP scheme youngsters, says Mobsby. "Training schemes operate within most of the big companies, and failing that there is always the micro business."

Micros are fairly easy to understand for students because of their college or school training and the widespread use of the home computer.

There is a 17-year-old in the south-east who, for a price, installs home computers and explains to parents and children alike how to use them. He will explain the documentation that comes with the computers and answer any questions a family might have, as well as suggesting applications that no one in the family may have thought of.

The bottom end of the computer market is a bit like the hi-fi market. Some users are now becoming so knowledgeable that they can buy the right equipment for a system, thus no longer needing an OEM or systems integrator.

The user will "buy all the bits and bolt them together," as one marketing director puts it.

These kinds of people are identifying a niche and filling it to the best of their abilities. And it is these people who will become the sales and marketing managers of the future.

Trying to market printers is difficult, said a spokesman for Anadex, although printer sales increased overall in 1983. The problem is that not many people take an interest in individual peripherals and sales or marketing pitches can often be wasted on the potential buyer.

Where sales were once made to data processing managers, who knew a company's output requirements, most volume printer sales are now made to system dealers. The dealers then package the printer with a keyboard and terminal for the business systems market. The printer does, of course, have a different name on the front.

"This makes sales and marketing jobs much harder," he says. One answer is to improve the products.

Another is to cut prices. Anadex has done both, increasing the speed of its printheads by 20% and cutting the prices of all its printers by a similar figure.

According to Gianluigi Bertino, OEM sales manager for Olivetti Peripherals Equipment, a college or university education cannot do too much for individuals who want to get into sales or marketing of OEM products. There are, however, "lots of opportunities within micro-associated industries for people who want this kind of job."

Olivetti takes on graduates for marketing and sales. "They become involved in project planning from a very early stage – this is a most important part of any operation," he says.

Marketing personnel take part in product launches within Olivetti, then following the success or otherwise of the launch they organise and launch further new products based on the results.

"In the industry as a whole, there are plenty of opportunities for people wanting to work in sales and marketing," says Bertino. "About 15% of Olivetti's resources are spent on sales and marketing – it's that important."

Mobsby adds: "There are all kinds of new directions that sales and marketing posts can take. New areas are developing all the time and these will require new people to take them up, with new ideas."

Steven Sonsino is features editor of Systems International.

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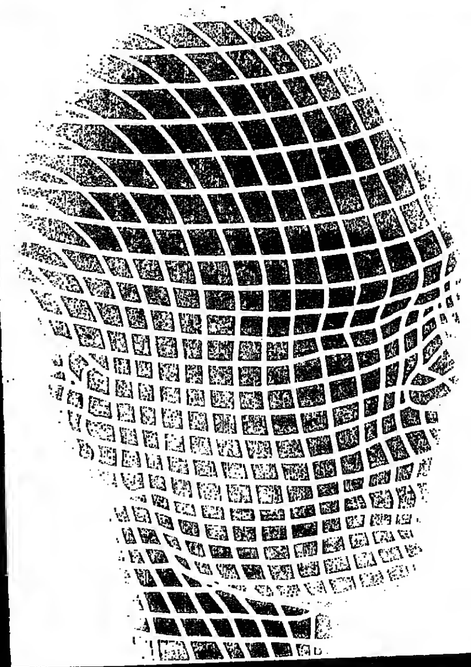

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Candidates should have a minimum of 2 years experience, preferably gained in a financial environment, that has covered the major phases of a development project. Knowledge of ICL IDMS would also be a distinct advantage.

Analyst/Programmer
c. £11,500

For this position the ideal candidate should have 3-4 years experience including a solid ICL COBOL background coupled with sound systems experience. Formal systems training would also be desirable.

Assistant Operations Supervisor c. £10,000

Applicants will probably have held a senior position in the operations area such as chief operator or shift leader and will therefore be able to work on their own initiative. Sound experience in most of the following areas is essential:
— DME Operating & Utilities
— VME Operating
— G2+ Macro Writing
— VME SCL Writing
However the most important attributes are self motivation, adaptability and the genuine desire to make a varied and all round contribution to the running of the operations section.

In addition to regular salary reviews, we offer a generous benefits package which includes a staff mortage scheme, non-contributory pension, flexitime, season ticket loan, free lunches and a Christmas bonus. A relocation package will also be available as appropriate.

If you think you have the drive and relevant experience for any of these requirements please call Christine McLean on 01-734 7394, to discuss the positions or send your CV to this address.

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With that background, Micro Focus is the perfect environment for ambitious Sales and Marketing professionals — energetic self-starters with a real desire to succeed in our expanding market.

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Knowledge of software, an understanding of the micro software market and a technical background will all be useful. A proven track record in selling is essential. For European Sales communication ability in French/German is vital.

Product Marketing
Marketing Services
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We seek bright, articulate people with the experience and flair to contribute in these fields. A background in the software industry is essential with the ability to demonstrate proven success in your current area of expertise.

With a growth rate such as ours the career and salary opportunities are exceptional. Your drive and commitment can thus be well rewarded. As well as excellent remuneration, benefits will include relocation assistance where appropriate.

For further information concerning any position contact:
Miss Ann Jackson Micro Focus Group Limited
26 West Street, Newbury, Berkshire.
on 0635-33518 (Direct) or 32646 x223
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Salary will be made attractive to high-calibre men and women who meet our requirements; benefits are what you would expect of a highly successful international organisation.

Please send full cv, including current salary, or write for an application form to Mike Short, Personnel Manager, Sigma Electronic Systems Limited, Sigma House, North Heath Lane, Horsham, West Sussex RH12 4UZ. Telephone: 0403 50445.

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Please contact Alasdair Scott, Lindsay Howie, or Mike Linford, quoting reference SSB/014

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Please send details of cv and other information considered relevant to the above company. Interviews will be held in London at the end of February, 1984.

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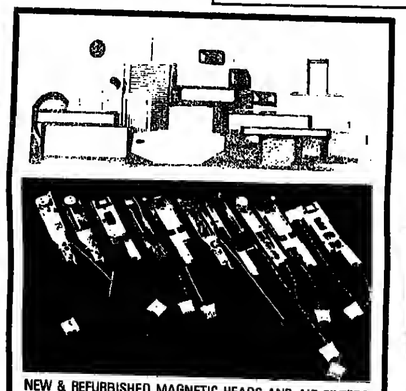

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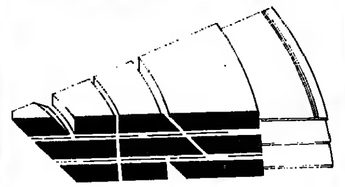

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RESEARCH

Alvey starts the productivity flood

John Lamb describes one of Alvey's key areas – software engineering

WILMOT . . . Claims users have a backlog of applications development.

THE first time most people in this business heard of the term software engineering was when it popped up as one of the four key areas of research in the Alvey programme. Since then, no self-respecting software company has been able to do without some mechanical aid to programming.

But like so many things in computing, there is little that is new in the idea of software engineering. It is all about improving speed with which systems are produced and quality of the final product.

"As far as I am concerned software engineering means doing things properly," says John Parker, principal consultant at Imperial Software Technology. "In the past, we have intended to develop software by the seat of our pants; software engineering is a recognition of the fact that a lot of the work involved in building software is repetitive.

"As far as I'm concerned, software engineering means doing things properly"

What one hopes is that the software industry will adopt a similar approach to civil engineering, in which there are well recognised methods of doing things, and so improve software productivity and quality."

There are certainly good reasons for improving the way in which software is produced. A survey of user expenditure carried out by *Computer Weekly* in conjunction with IDC Europe and published in September 1983, revealed that data processing staff accounted for 41% of the total spent on computing, amounting to about £2,641 million in 1982. This figure compares with the £2,020 million spent on hardware and £977 million that went towards buying software and computer services.

Robb Wilmot, managing director of ICL, claims that many users have a backlog of applications development that will take them three years to clear.

"Our group strategy is to offer high value solutions to high volume problems," he says. ICL, like many other firms, sees a ready market for any product which can either speed up the production of applications or allow end-users to adapt existing systems.

But what exactly is software engineering? According to Parker, it is a collection of methodologies and tools which help in the administration, production and testing of a software system.

Researchers have attempted to draw up procedures or methodologies which will guide designers and programmers in a formal way. Some of these procedures, like structured programming, have been around for some time. Others, like the Vienna Definition Methodology are less well known.

"It's a matter of understanding how the software development process works, and producing formal rules," says Parker.

One of the latest concepts is that of prototyping. Prototyping is an attempt to make sure that whatever designed technique is used in building a system, the design process is flexible enough to take account of changes in the original problem. It involves building little models or or incomplete versions of a system which end-users can experiment with.

"The benefits of some systems are inherently difficult to visualise," says James Johnson of Hallmark Cards Inc, who is an expert in data processing productivity.

"Assume, for example, that a manufacturing plant has a batch scheduling system and that a project team is asked to determine the feasibility of a real time system.

"In a feasibility study, it is almost impossible to define how a totally different method of operation will affect an entire plant. In this situation, the best way to understand the consequences is to observe a system in operation by implementing a working model."

Johnson points out that unlike existing methods of building a system, which attempt to produce a feasible system first time, prototyping is trial and error, with lessons learnt along the way being built into the final version.

Along with these new approaches to producing programs go new programming tools: fourth generation languages, data dictionaries, relational databases, application generators, development systems and so on.

In fact, there is such a plethora of systems that users are confused about how to employ them. One MUMPS user reports that although he has a data dictionary system supplied with his machine, he has yet to use it because he cannot spare anyone for the time it would take to master it.

Another user, Rob Herson of Massey Ferguson, complains that there are not enough general purpose tools. "Not all these tools are what they are cracked up to be.

"Each one tends only to cover 20% of the ground you want to cover." Massey Ferguson is looking for a set of integrated productivity systems.

It has certainly taken time for many of these software tools to reach users. Mapper, Sperry's integrated database which enables end-users to construct their own small programs, has been kicking around for 10 years, but it is only in the last two years or so that it has found success.

Investment in productivity tools has been very low indeed. "If you compare the way programmers use source editors with the facilities available on a word processor, you wonder why those facilities aren't available to programmers," says Parker.

Part of the reason is undoubtedly the cost of such refinements. Mapper 10, for example, will set a user back £134,000, although price cuts are promised.

Sperry claims that Mapper 10, primarily an end-user tool, cuts development time by as much as one tenth for certain applications, compared with producing Cobol code. The screen formatter alone halves the time it takes to produce screens, says the company.

Despite such impressive statistics, software engineering is really in its infancy. The Alvey Directorate believes there is a "critical need to move from the present ad hoc 'craft' practices of software production to a position which ensures that UK management turns increasingly to capital intensive methods of efficient software production and an engineered approach to reliability".

Over the next five years, the Alvey Directorate's software engineering programme will be spending some £38 million of government money, matched by £27 million from private sources. The aim of this effort is not only to develop tools and methods for producing software, but also to make sure that managers regard using them as normal practice.

The key development in the programme will be the production of an integrated project support environment (IPSE) in which tools and methods exist for the specification, design, programming, building and testing of a system throughout its life cycle.

The Alvey Directorate also believes that there are enough similarities between the hardware and software design processes to be able to combine the two in something that is called the information systems factory.

There is little doubt that software engineering offers solutions to many of the deep rooted problems of software production. What must people involved in selling and buying productivity aids prefer not to talk about is their impact on programmers themselves.

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RESEARCH

The Transputer is at the crossroads

Martin Banks queries government support of the Inmos Transputer

THE English have the reputation of supporting financially technological white elephants while buying in from abroad lots of Trojan horses. It isn't always true, but the reputation tends to stick.

As a race, we also have the reputation of thinking up new ideas for technological Trojan horses, giving them away and then letting the recipients practise on us.

Again, it isn't always true, but it is a reputation that rings true. The latest vehicle for such speculation – white elephant or give-away Trojan horse – is the Transputer from Iann Barron's Inmos. This insignificant looking device has imbedded in its silicon not only the active elements of an entirely different approach to designing computers, but also the seeds of classic English technical dilemma.

Should government departments provide the money to make such a device, given that its

It has the potential to make or break

support record has tended to be one of the key factors in creating the stated reputation, or should it let the company, and thus the product, go to the highest bidder out there in the commercial world.

The former route carries with it the potential political kudos that it would be the government which had the foresight and courage to grab a major opportunity to create the product of the future.

By the same token, it also carries the potential political minefield of having once again supported a profligate waste of national resources to no good purpose.

Not surprisingly, the second route carries with it the opposite potential. Sell to the highest bidder and the kudos of being a governmental sharp cookie is there to be had. There is, however, the risk that the buyer will sink just that bit more money into the product – money that had been asked for all along – make it work, and sell it back to us at vast profit.

Having been born of politics as much as any technical or financial consideration, it is probably only fair that Inmos should continue to be obliged to conduct its affairs in the glare of the political spotlight.

It could be a financial sponge for some time to come. The question, politically, is whether Inmos will become a financial black hole and, if not, when not.

There are reasonable technical arguments which indicate that the company will not in practice become a black hole. There are also reasonable marketing arguments. These are, however, set somewhere out in the near future.

When it started out, Inmos got saddled with being the world progenitor of the wonder chip – the 64K RAM – by an untutored national press. That same press then discovered that every other semiconductor manufacturing company in the world worth its diffusion furnaces was doing exactly the same thing. There was a quick volte face and the press called it all a con.

In practice, the 64K RAM was a part that, though it was hoped might make a profit in its own right, was something of a loss-leader to get a process going.

A semiconductor company needs a workforce and production plant that is working well if new circuits are to be produced, and easily categorised devices such as random access memories are helpful in that process.

In the end analysis however, Inmos is about the Transputer more than any other component it has so far designed or built. This device has the potential not only to make or break the company, it has the potential to make or break some big industry names.

Why this should be so is a function both of the device itself, and the direction in which computer technology per se is moving. It is possible to see that the two, the device and technology generally, are moving together with a certain degree of inevitability.

Taking the technology of computing first, there is the ever-present push from the users for more power, more speed, more flexibility.

One of the key requirements now is operational flexibility. Brute power is not forgotten, but today it must be flexible in its utilisation.

Because there is but a single processor inside the classic Von Neumann machine, it follows that only one task can be done at any time. Much effort has been put, therefore, into trying to develop bigger, faster and/or more powerful central processing engines with which to power computers.

No matter how powerful a single processor may be, however, it still ultimately restricts operations. Faster operation of the processor can give smaller periods in which to divide up a greater number of separate functions in a fantasy of apparent concurrent flexibility.

The way out of this particular bottleneck is, in practice, to find a new way to make the container. In terms of computer design, that means parallel processing, and the more parallel the better.

The Transputer combines a level of processing power that will be respectable in any form of computer together with a comprehensive range of internal and external communications capabilities.

All are tied together under the umbrella of a language and operating system that has been designed from the outset to work with truly concurrent processor operations.

Two devices are planned so far, though Inmos states that compatibility with future processors of virtually any type has been catered for. The first to appear will be the IMS T424, which will feature a 32-bit processor coupled to an on-board 4 Kbyte capacity of static random access memory and built-in support for multi-tasking operations, concurrency and communications. This is expected to be followed in 1985 by a 16-bit version, the IMS T222.

Fabricated using a combination of NMOS processing for the logic and CMOS for the memory, the device will hold the equivalent of 250,000 active components. With a cycle time of around 50 nanoseconds, the Transputer should be able to run at some five mips all by itself, let alone in a parallel configuration.

The instructions represent a fundamental aspect of the differences between the Transputer and other micros. The instruction set resembles a Reduced Instruction Set Computer (RISC) in that it is lean and tightly encoded, both of which make for fast operation.

Another key element in the design of the device is the inclusion of on-board memory. Though this is an obvious way of making use of the capabilities of semiconductor technology – design it in because it's available – on-board memory does offer programmers a wide range of new systems design options.

With its facilities, the Transputer provides the tools for re-thinking the fundamentals of computer design. Instead of being dependent upon the Von Neumann architecture, which is single-processor in style, it becomes possible to think in terms of dividing operations and processes up between processor devices as required.

Within reason, the same hardware configuration can act as a high-powered number cruncher and data file manipulator, with selection made under software control, not hardware re-design.

With the Japanese already working hard to develop fifth generation computers that will incorporate large amounts of artifical intelligence, the availability of a device like the Transputer would seem to be fairly critical.

BARRON . . . Has he a white elephant on his hands?

PEOPLE

■ *Back in October* **Neil Hall** *(left) a senior support analyst at GEC Computers at Borehamwood, broke the world record for inshore circuit racing over the "flying kilometre" on Lake Windermere. Bettering his 1982 record-breaking achievement, Hall averaged 70.95 mph on the required two runs in his Class T-1 craft, "GEC Computers". At this year's International Boat Show Hall received a certificate marking his feat from* **Richard Noble,** *the world land speed record holder.*

■ **Robert Harvey** has been appointed senior sales consultant at CCS, a Cleckheaton, West Yorkshire, company offering services based on mainframe and microcomputers, particularly for stock and production control applications. Before joining CCS he was responsible for national computer hardware accounts as part of the Leeds-based NCR sales team; and was the Stockton branch manager of United Computing for five years.

■ Data General announces the election of **Hisashi Tomino** as a vice-president of the company. He is president of Data General's Japanese subsidiary, Nippon-Data General.

■ Dicoll Electronics, the Basingstoke-based microminicomputer systems and graphics systems specialist, has made two appointments to its sales staff. **John Spreadbrough** has joined as sales engineer (graphics terminals). He has spent the last three years with Anadex, the US printer manufacturer, as a sales executive. **Nick Reedman** has been appointed sales engineer (computer systems), southern England.

■ **Geoffrey Rowett** (below) has been appointed vice-president of European operations for the LTX Corporation. Rowett joined LTX in June 1981 as managing director of LTX (Europe). He was previously a divisional director of ICL. His last position with ICL was as director of the peripheral products division.

■ As part of its expansion in the UK, ESC Software has appointed **Peter Fryke** (above) as general manager. Previously he was European vice-president responsible for establishing UCC software products in Europe.

■ **Bill Keen** has moved from CPU where he was terminal sales manager, to become Southern area terminal sales manager with Mellordata. Tom Cook, appointed Mellordata's Southern area printer sales manager, was formerly with X Data as a sales executive. Another newcomer to Mellordata is Vic Podmore also from CPU. He joins the company as a sales executive for the maintenance department.

■ Appointed systems consultant at MSA (Management Science America), providing customer support for General Ledger on existing and new accounts, Maurice Beleher was most recently with the Clayton Dewandre group of engineering companies, where he was responsible for all computerised accounting systems. Prior to that he was at Coventry City Council, where he was responsible for developing and maintaining a variety of financial systems.

■ The Gavilan Computer Corporation has appointed **Colio Cook** (above) as its European general manager. He was previously European marketing director of Sturage Technology.

■ **Bill Groves** has joined Molecular Computer as financial controller, European operations. He will be responsible for the financial affairs of Molecular's European subsidiaries. Groves joins from Computervision, where he was European director of finance and administration.

■ Computer Technology has appointed **Ian Stanley** and **Richard Griffiths** as sales support executives for a new team formed to sell to strategic accounts. Stanley is support consultant in the team working mainly for nationalised industries and companies in the *Financial Times* top 100 companies. Before joining CTL, he worked for ICL for more than four years. Griffiths has been appointed support executive in the team involved primarily in pre-sales support roles. He was previously an application consultant for Tymshare UK.

■ **David Parsonage** has been appointed manager, UK field marketing operations, at Rediffusion Computers. He joined the company in 1977 as territory manager for the Western region and his last appointment was product marketing manager in 1982.

■ Peachtree has appointed **Catherine Cornwell** as product manager, responsible for office productivity products. She was previously senior technical adviser at Incotern/Honeywell.

■ *Alfred Mulenga, deputy DP manager of the Zambia State Insurance Company, receives his membership certificate of the Institute of Data Processing Management from IDPM secretary-general, Ted Cliff. Mulenga spent 12 weeks in England during which he completed a Fellowship in Computer Management with Computotech in London and was also awarded the NCC Certificate in Systems Analysis.*

Mulenga is also a founder member of the Zambia Computer Society which has a membership of about 1,000 people.

DIARY

FEBRUARY 2

Private Viewdata: Achieving Business Benefits Today, BIS Applied Systems conference, Lord's Banqueting Centre, London NW8, £140. Details: 01-261 9237.

FEBRUARY 2-3

Implementation Strategies for Factory of the Future, conference sponsored by Technology Transfer Society, Royal Aeronautical Society Lecture Theatre, London, £300-345. Details: 01-242 4045.

FEBRUARY 5-7

VS APL Fundamentals, Cocking & Drury course, London W1, £300. Also February 21-23. Details: 01-493 6172.

FEBRUARY 5-9

Education Arabia and the Middle East Business Equipment, Communications and Computer Show, Bahrain, run by Overseas Exhibition Services. Details: 01-486 1951.

FEBRUARY 6-7

Business Modelling with Mini and Microcomputers, course by PQB Department of Institute for Chartered Accountants of Scotland, Tree Tops Hotel, Aberdeen, £339.25-379.50. Details: (031) 225 5673.

Introduction to Unix, Bleasdale Computer Systems course, London. Other courses in February/March. Details: 01-828 6661.

FEBRUARY 7

Expert System for Organic Synthesis Plaoniog, BCS Expert Systems Group talk, University College London. Details: 01-637 0471.

Data Privacy and Freedom of Informatioo, BCS Hampshire talk, Stanmore Hotel, Winchester. Details: 01-637 0471.

My Computer and Other Pets, BCS London (North West) talk by Heinz Wolff of Brunel University. Details and tickets: Dr L. R. Neal, Uxbridge 37188.

FEBRUARY 7-8

Electronic Point of Sale – Designing the Right System for your Business, Specifa Services seminar, Hurst, Berks. Details: (0734) 345585.

FEBRUARY 8

Electronic Offices, Institution of Electrical and Electronics Incorporated Engineers talk, Tollgate Moat House, Gravesend, Kent. Details: 01-836 3357.

Plastic Cards with Intelligence, BCS talk, Strathallen Hotel, Birmingham. Details: 01-637 0471.

The Impact of Computers on a Small Business, BCS Chester & North Wales talk, Theatre Clwyd, Mold. Details: 01-637 0471.

Future of the Alvey Programme, BCS Kingston talk by Alvey director Brian Oakley, Kingston Polytechnic. Details: 01-637 0471.

User Experience of Structured Design Methodology, BCS Newcastle talk, Neweastle Polytechnic. Details: 01-636 0471.

Short papers evening, BCS North Staffs, North Staffs Polytechnic. Details: 01-637 0471.

Query Languages, BCS South Essex talk, West Cliff Hotel, Westcliff-on-Sea. Details: 01-637 0471.

Distributed Data Processing in an Open Systems Environment BCS Sussex talk, Brighton. Details: 01-637 0471.

Prolog – a Fifth Generation Computer Language, BCS Teesside & District talk, Middlesbrough. Details: 01-637 0471.

How close to the PC must you get to make money?

You don't have to deal with IBM to cash in on the PC boom.

But you do need a computer that's operationally compatible.

A computer that allows you to benefit from all the software and peripherals that have been developed for use with the IBM PC and XT.

Happily, the new XTRA from STC fits the bill without matching the invoice.

The XTRA has been developed by ITT, the world leaders in IBM plug compatible workstations.

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JENSHEET

All you need to know about synch and asynch operation

Fred Jennings, of software and systems house Data Logic, has prepared a series of reports on networks – called Jensheets – and the eighth of these is on communications protocols. Due to space restrictions we are printing it in five instalments, of which this is the second.

WITH asynchronous operation each character sent/received over an asynchronous modem link at 300 bps - 1,200 bps or over an in-house link at 300 bps - 9,600 bps is 10 bits long:

One start bit=0
Seven bits of Ascii code
One parity bit (VRC)
One stop bit=1

The start/stop bits which frame each asynchronous character are used to start and stop the operation of the receiving device. The time between consecutive asynchronous characters can be any value between zero and the specified value of the inter-character time-out period.

"You know, I sometimes look at people like Doris, and wonder why the hell we bother."

Time-outs are an important aspect of line protocols. For example, one use of a time-out is to provide a software terminating condition to an unsuccessful or incomplete "Read" operation on a communications line.

With synchronous operation, each character sent/received over a synchronous link at 2,400 bps - 9,600 bps is normally eight bits long (seven bits Ascii plus parity bit or eight bits EBCDIC). The time between consecutive synchronous characters (sent as one transmission sequence must be zero.

When synchronous operation is used in conjunction with a control character orientated protocol then each transmitted character sequence (data block or response) must be headed by a number of SYN characters.

The number of SYN characters prefixing each sequence varies with different protocols and different types of communications link (switched line or leased line). A general rule is to assume a maximum of four SYN characters per transmitted character sequence.

SYN characters are used by the receiving device for character synchronisation purposes. For a receiving device to become character synchronised it must detect two consecutive SYN characters in the received serial character stream. Once synchronised, the remainder of the serial stream is divided into eight-bit quantities and handled as characters. Any SYN characters found after that are discarded.

SYN characters are often found within the data in a data block and these are normally the result of a SYN FILL operation by the transmitting device.

SYN FILL is a facility normally built into the transmission hardware of a Synchronous Communications Interface (SCI). If a computer which is controlling its SCI should fail to provide the next character of a transmission sequence in good time, then the SCI will automatically transmit SYN characters to maintain character synchronisation until the next character is provided.

Manufacturers call this a computer UNDERRUN condition.

On the receiving side there is a reverse situation to this called a computer OVERRUN condition. This occurs when a computer cannot accept all the data in a received data sequence from its SCI because of receive buffer allocation problems. Most SCIs detect this OVERRUN condition and inform the computer via status information. In many cases the recovery from an OVERRUN condition is to request the data again by sending a NAK.

Excessive UNDERRUN and OVERRUN conditions normally point to an overloaded computer system or poor system design.

The main reason for introducing the subject of asynchronous and synchronous operation is to explain that some control character orientated protocols operate equally well with asynchronous or synchronous operation using the same character sequences.

For such a protocol the only difference apart from the number of bits per serial character (10 or eight) is that with synchronous operation each transmitted sequence is preceded by SYN characters.

For bit-orientated synchronous protocols (eg HDLC, SDLC) the beginning and end of each transmitted sequence (frame) are marked by one eight-bit FLAG character (binary 01111110). SYN characters and Control characters are not used and data transmission control functions are provided by a Control field which is the second character following the leading FLAG in each frame.

A half-duplex contention protocol is generally used on a point to point synchronous link to support the following device configurations: computer to computer, computer to remote job entry (RJE) terminal, RJE terminal to RJE terminal.

With a Poll-Select protocol the communications link is always active due to background polling, but with a contention protocol the link is active only when data is being transferred.

When a link which is operating a contention protocol becomes idle then a communicating device on either end of the link can make a "bid" to send data.

A "bid" on a synchronous link is normally a five character sequence (SYN, SYN, SYN, SYN, ENQ). After sending a "bid" a device waits for an acknowledgment (SYN, SYN, SYN, SYN, "ACK") from the other end which indicates that the "bid" is successful and that the device can proceed to send its data.

If a device does not receive an acknowledgment to its "bid" after a given time-out period then the device sends its "bid" again. If two devices on the same link make a simultaneous "bid" then each device will ignore the other's "bid" because with a half-duplex protocol a device is either sending or receiving.

To overcome this problem, devices on each end of a communications link have different time-out periods, so that in the case of simultaneous "bidding" one device will eventually win.

A device which has its "bid" acknowledged will start to transmit its data in blocks. Each individual block will be acknowledged (ACKed) or NAKed by the receiving device, and NAKed blocks will be retransmitted.

Depending on the protocol an ACK can be a single Ascii ACK control character.

The control character used to terminate the data section of a transmitted block is normally an ETB except for the final data block where an EXT is normally used. When a sending device has sent all of its data blocks then it sends an "End of Transmission" sequence (SYN, SYN, SYN, SYN, EOT).

Screen star.

The TeleVideo 924.

In a family of great performers the TeleVideo 924 is truly a star performer, offering the power and versatility you would expect from the world's leading independent manufacturer of video display terminals.

Ergonomically designed, to both tilt and swivel, the non-glare high contrast CRT combines beauty with brains. Packed with features which include 16 non volatile, programmable function keys, 64 special graphics characters, 32 non-embedded visual attribute combinations, Programmable delimiters, Buffered printer port, Reconfigurable keyboard.

Nor is the 924 a one night wonder. It will go on performing with unmatched reliability, an area in which its vertically mounted, convection-cooled logic board is setting new standards.

If you would like to see the TeleVideo 924 perform (or would like a more detailed biography) make a reservation with the able bodied people on the right.

Supporting cast.

As a supporting cast we will not be as well known to you as the star performer on the left.

In bettering the service that you can offer your customers though, we are just as essential.

Because a professional back-up service can mean the difference between you giving a customer the service he wants or giving him problems he can do without.

We'll give you, for example, a firm and competitive price.

We'll give you a definite delivery date (as a promise, not a guess) and we'll provide all the advice you need to make the most of every machine you sell.

From a printer to a touch sensitive screen and beyond.

And we guarantee our concern won't stop with the delivery van.

Mellordata's Field Engineering Group has been on the road for ten years keeping computers computing.

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Personal touch in typing centre

THE new Panorama Personal Typing Centre's basic system consists of an 8088 processor, 14-inch screen, separate keyboard, integral software, one 5¼-inch single sided double density floppy disc drive and a 20 characters per second daisywheel printer.

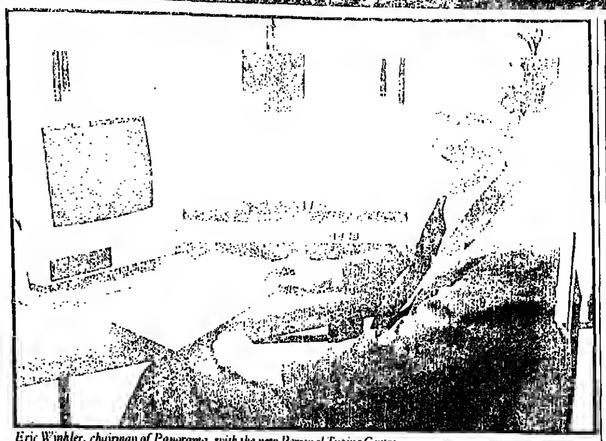
The 14-inch adjustable screen shows 25 lines of 80 characters. The screen guides the operator with messages, and the moveable keyboard contains a row of labelled function keys with commands like **BOLD** and **UNDERLINE** thus avoiding complicated code keys and sequences that can make some electronic typewriters difficult to use.

The Centre combines software and **HELP** and **UNDO** mechanisms. Pressing the **HELP** key provides additional information on how to use the part of the centre you are working with.

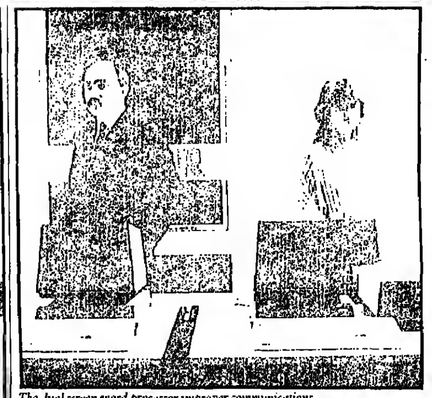
UNDO allows you to correct your corrections – by pressing the **UNDO** key the typist can change back the last change made and this process can be continued right back in the beginning if required.

Development was based on producing a printer that was modular and robust in design, making it easy to manufacture and maintain. A quality assurance program is included in the manufacturing process and stringent environmental and reliability tests are carried out to ensure that high levels of printer quality are maintained.

Panorama Office Systems (CW), Silbury Court, 352 Silbury Boulevard, Central Milton Keynes MK9 2HJ. Tel: (0908) 660444.



Eric Winkler, chairman of Panorama, with the new Personal Typing Centre.



The dual screen word processor improver communications.

Catering for lazy executives

LANIER Business Products, the US-based manufacturer of electronic office equipment, has launched a new word processor that comes with two screens, two keyboards, a 10 Mbyte Winchester disc and a daisywheel printer, price £7,250.

Called the EZ-2, the system has been designed so that an executive and his secretary can both use the same machine to enter text, make amendments, check spelling and so on without having to move from their respective desks.

In effect, the EZ-2 is a two screen multi-user/multi-tasking microcomputer system complete with hard-disc storage and a letter quality printer.

The EZ-2 has 256K of memory, and a full range of software, including word processing, "Datamanager", EZ-Spell, "EZ-Task" and Greek word processing for academic/scientific text and equations.

A feature of the system is that one screen can be used for word processing, while the other can run any piece of CP/M compatible software.

Lanier Business Products (CW), Reunell House, 40A Mill Place, Kingston-upon-Thames, Surrey. Tel: 01-549 8741.

Lock into the Micro Burst bus

A DIRECT high-speed data path between peripherals and memory on Data General Eclipse S/20 microcomputers has been launched by Lock Distribution.

The new Micro Burst Multiplexer Channel is a four-megahertz input and output bus.

Lock Distribution can also provide Winchester discs with 15-Mbyte or 50-Mbyte capacities to run with the device in applications with many disc accesses.

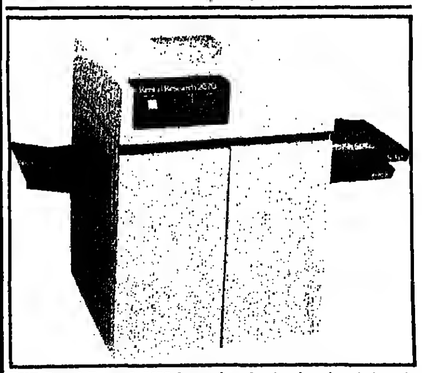
Lock Distribution (CW), PO Box 0L64, Neville Street, Oldham, Lancashire OL9 6PY. Tel: 061-652 7311.

Emulator links DEC to printers

AN emulator which allows DEC systems to be used in conjunction with either Qume or Diablo printers has been introduced by ISG Data Sales.

Called the Emudec, the device emulates the DEC LOP 02 printer, enabling Decmate and other similar DEC systems to operate with Qume, Diablo and other compatible letter quality printers.

ISG Data Sales (CW), Wellington Industrial Estate, Basingstoke Road, Spencers Wood, Reading RG7 1AW. Tel: (0734) 884666.



THE Rental Research 2670 laser printer has just been launched on the market.

It runs at a claimed speed of up to 28 pages per minute. It produces letter quality print with a standard dot density of 90,000 dots per sq inch.

With 1,300 fonts available, the 2670 can be adapted to suit the requirements of the individual user. Once installed, it can be easily upgraded if these requirements should change. Users have the facility to intermix fonts and print graphics, logos and signatures.

Rental Research (CW), 59-63 Worship Street, London EC2A 2DU. Tel: 01-247 5901.

PRODUCTS

Package for small retailer

WITH the increase in power of the microcomputer, DSI Retail has put together a microcomputer package called Microrempac, designed for small non-food chains of up to 10 outlets or large multi-department single units, such as sports shops.

The system is written for the Sirius I computer, with 10 million characters of hard disc storage.

The system is modular, and covers stock control and merchandising, purchase order management, ticket printing and reading.

A feature of the system is that stock is controlled down to branch, department, style, colour and size.

Bill Collier, general manager of DSI Retail, explains: "It is sometimes argued that the small retailer does not want control down to this level. We don't agree – if it's the wrong colour or the wrong size, then it just won't sell."

As well as current stocks, information is held on sales in each of the last five weeks and for year to date.

Stocktaking with a laser gun used in conjunction with bar-coded garment tickets.

The files are open to screen enquiries at any time and there are periodic reports to help decisions on stock replenishment.

DSI Retail (CW), Abelson House, Coventry Road, Sheldoo, Birmingham B26 3PS. Tel: 021-742 3241.

Foundry system gives better control

ADS COMPUTERS is to launch FO-COM, a foundry computer system designed to provide management of small and medium sized foundries with better control over operation and administration. In essence, the system will halve clerical time and increase productivity by 10%, says ADS.

FO-COM has been designed to minimise overstocking, supply and production bottlenecks, reduces paper work, administration and clerical costs, provide accurate costing, improve cash flow and increase productivity.

This is achieved by the control which FO-COM maintains over casting records, order processing, costing and pricing, acknowledgements, delivery schedules, shop loading, production control, invoicing, ledgers, credit control and payroll.

A suite of six major integrated programs contained within FO-COM include foundry operations, master base, order processing, production control, accounts and payroll. Additional facilities include: weight estimating, quotations, on-line budgeting and word processing.

FO-COM's production control program allows job costing and future pricing to be analysed by the production of accurate information on productivity, scrap rates, output and cast weights, says ADS.

Over 100 sales and 100 debtors can be processed in one day by FO-COM's accounts facility. A suite of programs incorporates sales ledger, statements, aged debtor lists, purchase ledgers, nominal ledgers, sales analysis and numerous management financial reports.

ADS Computers (CW), Milton House, 172 Bath Road, Slough, Berks SL1 3XE. Tel: (0753) 821321.

Marconi's tracker ball.

Tracker ball controllers

A NEW range of tracker ball controllers for mini and microcomputer systems and low-cost work stations has been introduced by Marconi Electronics Devices.

Known as the RB3, this tracker ball controller uses a 3in diameter ball supported in a low torque mechanism to translate an operator's two-dimensional hand movement into exactly equivalent electronic signals for precise positional control.

Marconi Electronic Devices (CW), Doddington Road, Lincoln LN6 0LF. Tel: (0522) 688121.

PRODUCTS

Back-up for 20 Mbyte Winchester in 4 minutes

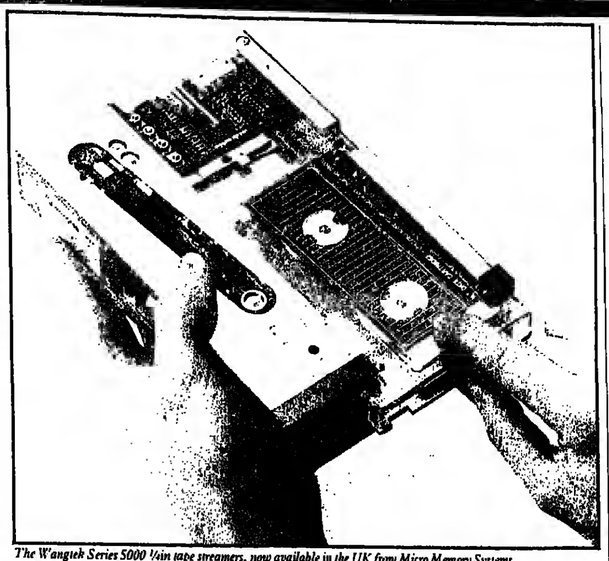
MICRO Memory Systems has launched in the UK a range of ¼in tape streamers capable of backing up a 20 Mbyte Winchester in four minutes, or a 45Mbyte disc in nine minutes.

Designed for use in multi-user, multi-tasking computer systems and networks, the Wangtek Series 5000 tape streamers fit into the same physical space as a half-high 5¼in floppy or hard disc.

The intelligent formatter is also packaged in a half-high module, enabling the complete back-up system – tape drive and formatter – to be fitted into the same space as a full height 5¼in disc drive.

Data capacity is 20 or 45 Mbytes, and data transfer rate is 90 Kbytes per second at a tape speed of 90 inches per second. They use a serpentine recording form, with nine or four tracks, at a recording density of 8000 bits/inch.

Micro Memory Systems (CW), Kennet House, London Road, Newbury, Berks RG13 1JN. Tel: (0635) 40405.



The Wangtek Series 5000 ¼in tape streamers, now available in the UK from Micro Memory Systems.

Data acquisition board for IBM Personal

DATA Translation has announced a data acquisition and control board for the IBM Personal Computer. Available for £295 (OEM quantities), the single board DT2808 includes analogue and digital inputs and outputs, an on-board programmable clock, and an on-board microprocessor.

Providing 16 channels of A/D with 10-bit resolution, two channels of D/A with 8-bit resolution, and 16 lines of digital I/O, the DT2808 is intended for applications ranging from industrial control, data logging, product testing and quality assurance to home energy management and security systems.

The DT2808 is part of Data Translation's seven-member family of IBM-PC compatible data acquisition hardware and software products. All of these are compatible with the IBM-PC, IBM XT, Compaq Portable, Eagle PC, Columbia Data Systems, and the DEC Rainbow 100.

The DT2808 design includes an on-board microprocessor which acts as the interface between the DT2808 and the host personal computer, controls all on-board analogue and digital I/O operations, does self-tests.

Alternatively, the DT2808 may be programmed using PCLAB, Data Translation's library of Basic-callable subroutines. PCLAB is a real time software package supporting all the analogue I/O, digital I/O, and clock functions of the data acquisition boards.

Also available with the DT2808 is the DT707 screw terminal panel and DT752 signal conditioning/screw terminal panel.

The DT707 is priced at £149 and the DT752 at £175 in single quantities. PCLAB is £495.

Data Translation (CW), 430 Bath Road, Slough, Berks. SL1 6BB. Tel: (06286) 849862.

Package turns PC into design station

DICOMED (UK) has announced a package of software and peripheral hardware which it says will turn an IBM Personal Computer into a design station which will produce high resolution business graphics.

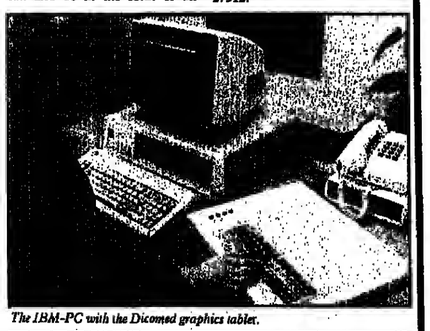
Called the Dicomedia Micro 2, the system calls for no extensive knowledge of either computers or artwork techniques. With a minimum of training the operator can create graphics for a wide range of business and presentation uses. Pie charts, bar charts, column charts, line graphics, organisation charts and text are within the scope of the system.

The design created on the IBM-PC is transmitted – via a telephone modem or on disc – to a Dicomed Colour Recorder for production of the final output. This is most commonly a 35mm slide, but can also be in the form of an overhead transparency.

In addition to producing slides with high colour saturation and a resolution of 8,000 lines, says Dicomed, this process cuts costs by a good deal more than half when compared with conventional slide production methods. Origination costs are also lower as no typesetting, masking or keylining is required.

The Dicomedia Micro 2 package consists of the software and a graphics tablet. Text is entered on the keyboard and displayed on the screen. There are seven sizes of characters in Helvetica. Charts can be prepared automatically with the operator requesting the type required and entering the numeric data.

Dicomed UK (CW), Coworth Park House, Coworth Park, Ascot, Berks SL5 7SF. Tel: (0990) 27312.



The IBM-PC with the Dicomed graphics tablet.

IBM-type terminals

ALTERNATIVES to the IBM 3278 and 5251 terminals are being introduced by CPU Peripherals in the shape of Esprit Executive 10/78 and 10/51. Both terminals have IBM layout keyboards and in conjunction with an appropriate protocol converter, will perform all IBM 3278/5251 applications with no software changes.

One-off end user recommended prices are £1,046 for Executive 10/78 (IBM 3278) and £1,075 for Executive 10/51 (IBM 5251).

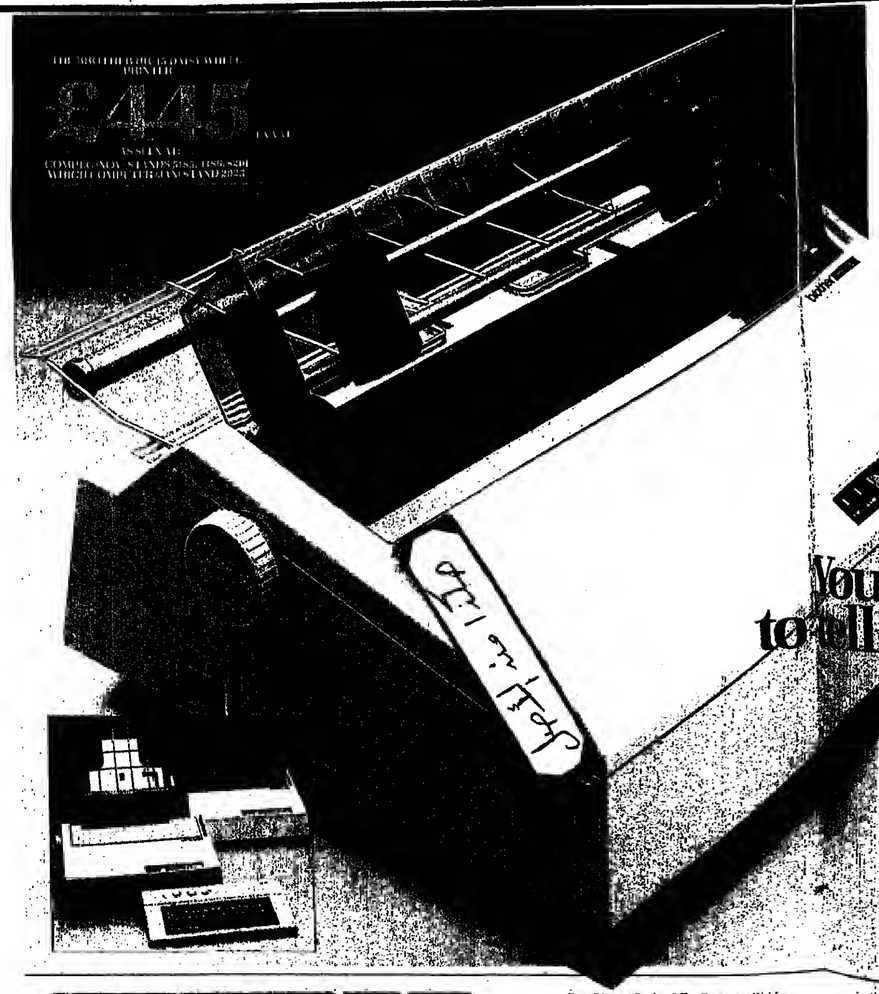
CPU Peripherals (CW), Rudd Industrial Estate, Govett Avenue, Shepperton TW17 8AQ.

Microfloppy follow on

SHUGART has introduced a double-sided microfloppy disc drive capable of storing one megabyte of information on the industry-standard 3½in media. The Shugart 350 is a follow on to the company's first microfloppy drive, the 300.

Designed to operate with the Ansi working standard 3½in hard-shell cartridge media format the Shugart 350 provides six-millisecond track-to-track access time and 80 tracks per side.

Shugart Corporation (CW), PO Box 57, Woking, Surrey GU21 1AJ.



All you require is a little peace and quiet.

By the time you've finished reading, you'll be convinced that the HR-15, from Brother International Europe Limited, is quite simply an outstanding printer at an exceptional price.

That's not to say it's basic. Far from it.

EVERYTHING YOU WANT FROM A PRINTER.

Daisy wheel, letter quality, and bidirectional printing at a speed of 13 cps (Shannon text), 18 cps maximum, is the platform upon which Brother have developed the HR-15. Making it an attractive proposition to business people and hobbyists alike.

Take the daisy wheel itself.

Available in a host of typefaces, it comes encased in a protective cartridge.

As much to guard it from mishandling and prolong its useful life as to save you from dirtying your fingers.

A small point, perhaps, but it's indicative of just how far Brother go into the planning of their machines.

Simple but ingenious ideas like a ribbon cassette that snaps into place, plus a separate red ribbon.

Ingenuity that extends as far as a family of compatible accessories.

More specifically, the TF-30 tractor feeder for continuous paper feed.

The CF-50 cut sheet feeder for word processing and letter use. It can automatically feed 150 sheets of A4 size paper, and the movable roller guide allows you to slip in a different sized sheet without removing the unit.

Finally, an invaluable attachment for all small businesses, the KB-50 keyboard.

It transforms the HR-15 into a sophisticated electronic typewriter.

Allowing the HR-15 to be of more use around the office than a lot of its competitors in the printer market. And, as with all of the Brother accessories, the price adds to the HR-15's economic performance.

SOPHISTICATED OPERATIONS AT YOUR FINGERTIPS.

As the functions, by necessity, become more complex, Brother have kept their operation as simple as possible.

At the touch of a button, the HR-15 can be set to continuously print whatever is stored in its 3K buffer. Making form letters and document duplicates no problem at all. It also leaves your computer free for other operations. To clear the buffer for new text, all you do is re-press the same button.

The HR-15 boasts proportional spacing which eliminates unsightly gaps between characters, giving a uniform appearance and highly professional finish.

For those finishing touches that give your printout that something extra, the HR-15 can print in two colours, shadow print and underline.

All carried out automatically during the print run, as instructed by your program.

Should that program be of a scientific or unusual nature, the HR-15 can take it in its stride. Fractions, exponential or any other characters that require specialised treatment are dealt with by its super and sub script facility.

There's even an impact control to vary the character arm pressure on the paper, which is ideal for making carbon copies.

TAKING THE WORRY OUT OF INTERFACE.

An impressive array of capabilities which is equalled by interface and DIP switch options, thereby extending the versatility of its operation.

At no extra cost, the HR-15 offers a choice of either a Centronics parallel or an RS-232C interface and it's compatible with almost all the micro computers currently available.

There you have it; the Brother HR-15, its facilities, its simple plug-in accessories and its interface connections.

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You don't need a computer to tell you which printer to buy.

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NCR system aimed at small hotels

THE NCR 2160 Lodging System is a guest accounting and food service system for small to medium-sized hotels and motels.

It handles accounting for advance deposits, registration, charge posting from the front desk or separate service locations, package deals, checkout, and city ledger.

Food service features include timekeeping and inventory options, weatproof micromotion keyboard and multiple pre-set price keys.

Features of the system include an optional form number reader which automatically recalls previous balance information from memory. Personnel therefore do not need to enter manually numeric data such as room number and previous balance.

A memo key allows the operator to type in information after an entry on an account.

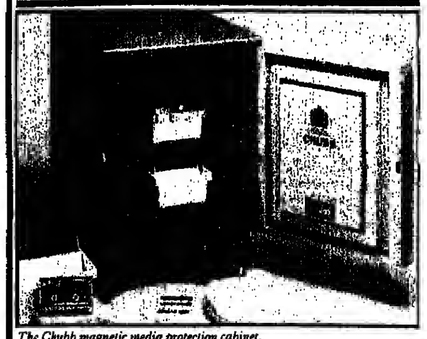
A variety of front desk, restaurant, bar and other revenue centre management reports is available.

A typical configuration, including a processor, five 2160 terminals, and a variety of printers sells for about £25,000.

The system will be available for delivery within two to three months.

NCR (CW), 206 Marylebone Road, London NW1 6LY. Tel: 01-388 8248.

The 2160 Lodging System.



The Chubb magnetic media protection cabinet.

Protection for floppies

FLOPPY discs are easily damaged. Manufacturers recommend that they are not exposed to temperatures above 52°C or humidities above 85%. Even a hot mug of coffee if spilt or stood on a disc represents a hazard and a smouldering cigarette or fire would create temperatures which would destroy discs in minutes unless protected.

A new fire protection cabinet from Chubb provides protection at workstations for floppy discs, data cartridges, tape reels, hard disc cartridges, micro film and micro fiche, against fire, dust, magnetic fields from office equipment, humidity, unauthorised access, pilferage and accidental or malicious damage.

The cabinet has been awarded the VDMA-S60DIS label for floppy disc protection following independent fire tests.

Chubb & Son Lock & Safe Co (CW), 51 Whitfield Street, London W1P 6AA. Tel: 01-637 2377.

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Training in PL1, Fortran, TSO/SPF, CMS in an IBM environment operating under MVS/JES2 and/or VM.

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Team Leader/Designer and Project Programmers

Candidates should have between 3 and 7 years' Real Time Development experience, gained in IBM, TANDEM, DEC PDP and/or VAX based projects.

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Logica B.V employs staff of the highest calibre, who work closely with Client staff during the course of the projects; candidates should therefore possess good academic qualifications and powers of communication.

The Netherlands is a stable and prosperous country, and is regarded as the commercial gateway to Europe. It is roughly the same size as Wales, and English is widely spoken. The rest of Europe is easily accessible by road, rail and air, and Holland itself offers the expatriate a standard of living and social facilities comparable to those enjoyed in the United Kingdom.

Logica B.V will offer successful candidates an attractive remuneration package, plus total relocation cost reimbursement. Shortlisted candidates will be able to travel to Rotterdam for a day to visit Logica's Head Office to meet staff and to discuss career opportunities in more detail. Initial interviews will be carried out by SCR in London, Birmingham and Manchester.

Applicants are asked to register their interest with our London Office, or to call **Rex Ashcroft** directly during working hours on **Amsterdam 76 09 47**, or **Amsterdam 73 78 22** during the evening or over weekends, or to send a copy of a detailed personal C.V. to our London address quoting reference RAL/1.

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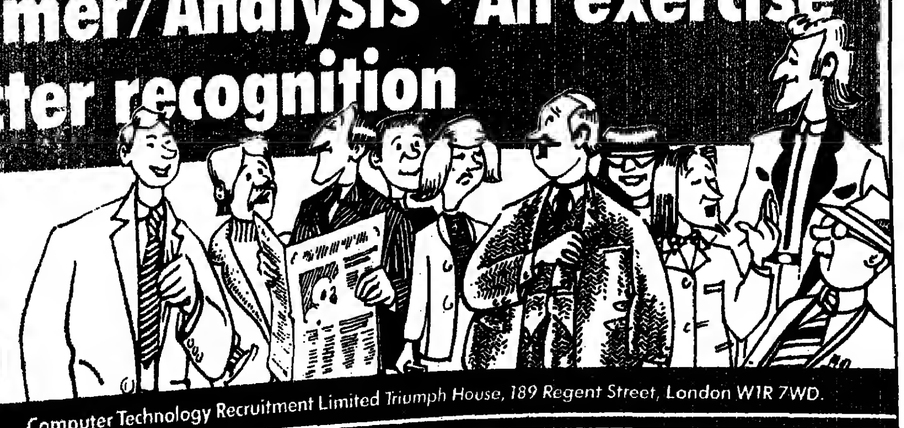

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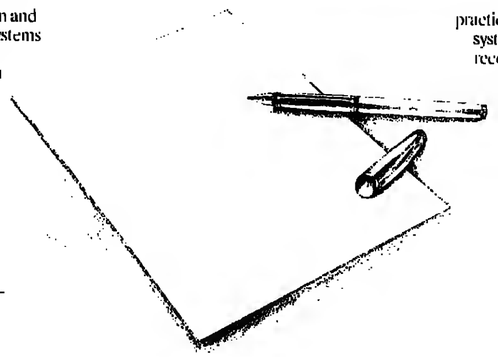

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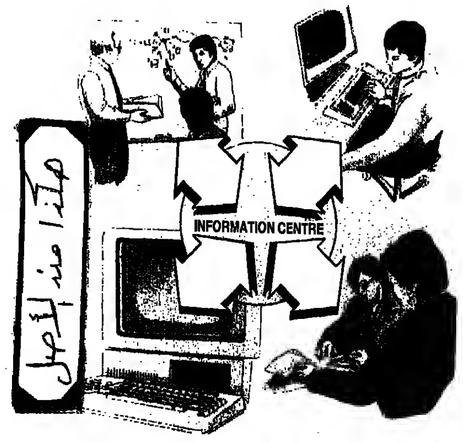

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We are a well resourced, wholly British concern, playing a highly visible role in realising this concept by the establishment of a new Software Products Company. We are committed to achieving excellence in the production and marketing of tools for the emerging ADA Programming Support Environment.

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Our development programme creates NEW opportunities for Project Leaders, Team Leaders, Designers and Programmers who will enjoy dedicated 'state-of-the-art' development, based on powerful 32 bit super minis.

Whilst experience of ADA/APSE would be welcomed we recognise the need to train. We would therefore wish to meet with candidates possessing at least eighteen months' software engineering experience using PASCAL, or indeed any similarly structured language.

If you feel you can contribute to this exciting realisation of the user-friendly and intelligent computer systems for the Fifth Generation, contact our Advising Consultants **Stephen Brown** and **Alan Carnell** on **01 935 0671** or telephone in the evenings from 7.00 till 10.00 on Hornchurch 72610 or Harpenden 2976. Alternatively, submit a full Curriculum Vitae in confidence to our London office, marking this reference GS2.

(7439)

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Europe Scandinavia

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The successful applicants will be working on advanced software development projects in Holland, Italy, Sweden and other locations in Europe and Scandinavia.

JA340/1

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Building on a century of success NCR serves the information processing needs of a wide range of businesses throughout the world. At the hub of European in-house development activity is UK Information Systems and Services, responsible for the systems, telecommunications, office automation and computer processing within NCR. Several vacancies exist for **Programmers** and **Analyst Programmers** to join a number of development projects using sophisticated on-line development tools on a variety of hardware from mainframes to personal computers. Successful candidates will be working in an advanced systems, telecommunications and office automation environment, with career prospects to assume specialist roles within ISS or the NCR marketing and support organisations.

LOCATION: N.W. LONDON JA336/4

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In return we offer competitive salaries and excellent conditions of employment.

LOCATION: CITY JA340/3

Confidential Reply

SOFTWARE ANALYSTS

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Our client is a world leading manufacturer of 32-bit minicomputers. The support team plays a vital role in the increasing demand for the company's products. Vacancies exist for **Software Analysts** to expand the team responsible for UK and Northern Europe software support. Experience is required in two areas:

Scientific, Technical and Real Time – applicants should have four to five years' experience in a scientific, industrial or Real Time environment and be fully conversant with operating systems and communication software; scientific high level languages and/or assemblers.

UNIX and 'C' – applicants should have in-depth experience of UNIX and/or 'C' and will be involved in a challenging role of pre- and post-sales support of UNIX and the associated languages.

We offer excellent salaries, company cars and a range of benefits normally associated with an organisation of our standing.

JA340/4

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AN IMPORTANT MESSAGE FOR CONTRACTORS!

We are interested in hearing from all established contractors who are available for reassignment and also those who are intending to become freelancers within the next six months.

If your expertise is of a proven high calibre and your skills are not advertised then you are still most welcome to register with us as many of our clients' requirements are satisfied from our databank without the need to advertise.

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SYSTEMS ANALYSTS TO £11,000

Applicants should have around two year's experience of analysis and design, ideally in an on-line environment utilising database techniques. Knowledge of DOS/VSE, CICS or DL1 would be an added advantage as would experience of manufacturing or financial systems.

As well as attractive salaries benefits include 5 weeks holiday, pension and life assurance schemes, two subsidised restaurants and extensive sports and social activities.

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SPL International

ANALYST/ PROGRAMMERS

to £14,000

SPL International is one of Europe's leading systems and software houses. Our Information Systems Division is currently seeking Programmers and Analysts to join them in the design, development and system testing of several sophisticated applications. These systems are developed to the highest professional standards, using advanced implementation techniques. The projects are based in London, however opportunities also exist for overseas assignments.

Applications are invited from Programmers and Analysts with sound knowledge and experience of Cobol, preferably in a banking or financial environment. Successful candidates will receive an excellent salary which will reflect both your own experience and the importance of these projects.

LOCATION: LONDON JA339/1

Confidential Reply

TRAINER

£ attractive

Our client is a progressive training and applications software house. Their specialised areas of experience lie in the fields of financial planning, word processing and database management utilising a broad range of microcomputers. Increasing demand for the company's products and services has created a requirement for a Trainer who will be responsible for devising and implementing customer training courses. Specific areas of interest will be a knowledge of financial management/planning systems (ideally Multiplan, Visicalc and Supercalc) and word processing systems. The ability to write technical manuals will be necessary and experience of IBM PCs, CPM and Basic would be a definite advantage. Our client will offer an attractive salary and opportunities for career development as the company grows.

LOCATION: MIDDLESEX JA339/2

We should be talking to each other **ICL**

DESIGNERS & IMPLEMENTORS

SYSTEM 25 to £11K

The ICL Retail Business Centre in Bracknell provides total systems solutions to clients who range from the high street shop to the vast hypermarket.

It's a business area that's rapidly expanding and ICL are currently exploiting EFTS, new POS terminals, communications networks and sophisticated business applications.

This in turn has created some exciting opportunities for Designers and Implementors for System 25 in Retail environments, and with ICL such professionals can expect some equally exciting rewards and benefits.

To join the Retail Business Centre, you should have at least two years' experience of System 25 programming and be able to express a real commitment to exploring this challenging market area.

LOCATION: BERKSHIRE JA338/3

Confidential Reply

ANALYST/ PROGRAMMERS

£10-£12,500

Established in 1964, over 50% of our client's business is in mailing management and direct mailing systems and services. Continuing development has produced the most advanced computer mailing software and systems available in the UK supported by a large and stable team representing over 80 man years of software development and mailing applications. Expansion has created vacancies for Analyst/Programmers with good commercial Cobol programming experience gained in an IBM DOS/VSE environment. Familiarity with VOLLIE, CICS, SELCOPY or LIBRARIAN would be helpful. Personability and communication skills are essential as client contact will form an important part of these positions. In return our client will offer excellent salaries which are negotiable according to experience and a comprehensive benefits package.

LOCATION: CITY JA339/4

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Systems Analysts c £10,500
RPG III Programmer/Analysts c £9,000

Mid-Wales

Recently a great deal has been said about the scope and opportunities to be found in Wales, but at Laura Ashley we've been aware of that fact for a long time. Over 20 years to be precise. In the rural beauty of Mid-Wales we have developed the home furnishing and fashion products that have made us internationally famous, investing in every kind of resource that will enhance this success still further. DP is one of our prime committments.

We have established an IBM System/38 facility that is at the very forefront of development, serving a diverse range of applications. But because we're ambitious and forward thinking, we do not intend to stop there. We want to maximise our computer power and consequently are investigating many new areas of involvement. That's where your challenge starts.

Systems Analysts (2 positions)

If you would like to be part of an exciting development programme covering Production, Retail and Financial systems in an online database environment, then we would like to hear from you.

System/38 experience is not essential. What is more important is an ability to develop systems from the initial feasibility stage through to full implementation with the minimum of supervision.

RPG III Programmers/Analysts (2 positions)

If you are an RPG III programmer with at least 18 months application programming experience we would like to hear from you.

We are starting a large scale development programme covering production, retail and financial areas in an online database environment involving the setting up of an international network.

You should be able to involve yourself totally in a department that expects its development personnel to liaise directly with users with a minimum of supervision.

Benefits for all positions include a 4½ day, 38½ hour week, 4 weeks holiday, discount on company products and generous relocation assistance when appropriate.

'Phone Richard Milsum, for an informal and confidential discussion of your requirements on: 01-354 1055, during office hours or on 01-958 2553 evenings and weekends.
Alternatively please send full details to me at:
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[7617]

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This is an excellent opportunity to advance your real-time systems knowledge. You will learn about, prepare and deliver lectures on the hardware and software of modern radar systems incorporating mini and micro computers.

Good communicative skills and a knowledge of computer applications are essential with an added background in radar systems and teaching experience providing an advantage.

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Required to teach programming techniques, software structures and languages used in the design of real-time systems. Programming experience is essential.

Accept the challenge to work on the latest advanced technology projects and become part of a compact team working in pleasant surroundings. Salary scales rise from £9,000 to £14,000, starting commensurate with experience. Advancement prospects are good. Relocation assistance.

A continuing or new career in teaching could be yours by applying in writing with details of experience to Mr Frank Braybrook, Personnel Manager, The Marconi Company Limited, Chelmsford Services Unit, Marconi House, New Street, Chelmsford, Essex CM1 1PL Tel 0245 353221 ext 478.

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[7533]

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In return our Client offers a good starting salary with regular reviews, 22 days' holiday, NCPS, relocation assistance where necessary and other large company benefits. If you are able to work on your own initiative and enjoy a challenge contact Mike Hermer for further details.

[7828]

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MANCHESTER

Elstree Computing Limited, a member of the Laing Group, is a leader in the development and marketing of specialist computer systems for the construction industry.

We can currently offer a challenging career opportunity to an experienced sales executive in our Manchester Regional office.

Candidates, probably aged 26/40, should have several years' sales experience, ideally in a computing environment. Some knowledge of the construction industry, particularly quantity surveying, would be an advantage.

An attractive basic salary and commission based on realistic quotas will be offered. A company car will be provided.

Please write with brief details of experience and current salary to:

D. C. Madden, Personnel Manager
John Laing plc
Page Street, Mill Hill
London NW7 2ER
Interviews will be held in Manchester

ECL

[7570]

Senior and Junior Programmers

STC Components, leaders in the manufacturing and distribution of electronic components, has an ambitious data processing expansion programme for 1984, coupled with an expanding business.

Our current hardware consists of a Tandem Honeywell D.P.S. 300, supporting over 300 terminals and ten I.B.M. System 34 minis, currently running the M.A.A.P.I.C.S. manufacturing modules, but with plans for further developments and enhancements.

To aid this expansion, we now want to recruit computer programmers with a minimum of one years experience in either Cobol or R.P.G. II to join us at our Harlow Headquarters. The duties of our Cobol Programmers are based around the writing and testing of programs through to completion, whilst the major function of our R.P.G. II programmers will be to write and test programs on the manufacturing system 'M.A.A.P.I.C.S.'

Successful applicants will have excellent career prospects in both the programming section, and in other parts of the Data Processing Department. Salaries are set at very competitive levels, which take into account the current market rates, age and experience of the individual, and are reviewed at regular intervals.

Benefits include five weeks holiday and generous relocation assistance, where appropriate. In addition, our Harlow Headquarters are within easy reach of London and excellent cultural and recreational facilities.

Please send full personal and career details to Phil Gray, Headquarters Personnel Department, STC Components, Edinburgh Way, Harlow, Essex.
Tel: Harlow (0279) 26811 Extension 2690.

STC COMPONENTS

STC

PERMANENT

Chief Programmer — **Surrey** — **Up to £14K**
A major multinational company currently require a Chief Programmer with a minimum of four years' COBOL with a working knowledge of DEC VAX/VMS. Ref: B412/PM

Software Engineer — **Bucks** — **Up to £12K**
If you are, educated to BSc/HND level, fluent in PASCAL (or other block-structured language) and have experience of DEC hardware you should apply now. (Relocation expenses will be paid). Ref: 8413/PM

Analyst — **Surrey** — **£13,500**
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Owing to expension a major company currently running an IBM mainframe require
a) **An Analyst**, aged around 28, with around five years in DP (two of which in analysis).
b) **A Programmer** with around a yeer's solid COBOL on any mainframe. Ref: 8414/PM

Contact Peter Hennessey at KPG or on 0293-516322 (evenings end weekends)

Programmer/Anelyst — **West End** — **To £15,000**
With a System 38 due the MIS department of this US corporation has e very full development program. To ensure that priority projects are completed on time they now need two experienced System 38 professionals. Ref: 8332/MJ

Analyst/Progremmer — **Middlesex** — **To £13,000**
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Analyst/Progremmers — **West London** — **To £12,000**
A newly formed software house, this compeny hes recently been awerded a major new development project. The environment is IBM 4300s under DOS/VSE using CICS – VSAM end IDMS – the applicetions required are Benking and Inaurance. Ref: 8411/MJ

Systems Programmers — **Berks/Middx** — **To £15,000**
A major new IBM site is looking for two young aystems programmere to join the support function. You should heve hed et leest two yeers' experience of VM or MVS end some knowledge of either SNA or X25 protocols. Ref: 8404/MJ

Contect David Mason John at KPG or on 01-891 0906 (eveninge end weekende)

Systems Engineering Support Analyst — **Kent** — **£12K + P.e. Neg.**
Minimum five yeare' anelyet background. To work on syetems configuretions, systems design and S/W design, including CAD package. Ability to eupervise dey-to-day H/W eveluetion, DEC RSX-11M MACRO II FORTRAN experience en edventege. Ref: 399/DF

Progremmer Technical Support — **Centrel London** — **£12K Neg.**
Graduate preferred, minimum three yeers' COBOL progremming experience with ebility to communicete effectively at ell levels. To deelgn interrogation packagee for users, prepere and present in-house training courses end provide technicel support. Opportunities for some travel. Ref: 388/DF

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Contact Haydn Parry et KPG

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Cobden House, Park Lane, Richmond, Surrey, TW9 2RA

(7609)

CHIEF SYSTEMS ANALYST
Circa £13,950

The Royal Liver Friendly Society, Liverpool, one of the largest collecting assurance societies in the country, with funds of over £340,000,000, has a vacancy for a Chief Systems Analyst.
The Society has an I.B.M. 4341 Computer with 4 megabyte memory using fixed disks and tapes. Additionally, a number of colour VDU's located in User Departments are attached to the mainframe.
Several major new systems are currently at an early stage of development. These include network development and the use of microcomputers.
To assist in the planning and control of these systems a Chief Systems Analyst is required.
The successful applicant will report to the Systems and Programming Manager leading a team of some 20 Analysts and Programmers. He/She will be at least 30 years of age, must have had a minimum of 5 years experience as a Systems Analyst, and have led systems development work on major projects. Knowledge and experience in the field of communications and microcomputers would be a distinct advantage.
In addition to a salary of c£13,950, fringe benefits include annual bonus, 35-hour week on flexible working hours, and contributory pension scheme. Generous concessionary rates of interest for House Purchase and re-location expenses where appropriate are also available.
Written applications, giving full personal details, qualifications and experience, should be addressed to:

Mr. N. E. Penny,
Management Services Manager,
Royal Liver Friendly Society,
Royal Liver Building,
Liverpool L3 1HT.
Tel: 051-236 1451 (Ext. 271).

Royal Liver Assurance

ANALYST/PROGRAMMER
New challenge in the Leisure Industry

Fylde Coast — **c.£9,500**

The DP Manager of this thriving member of a substantial UK group, involved in the Leisure industry, needs the support of a talented and innovative Analyst/Programmer.
Following a brief period of systems maintenance which will familiarise you with the organisation and its DP procedures, you will play a major role in transferring existing work on to a Honeywell Level 64.
The company is expanding its DP activities and this is an ideal opportunity to be in at the ground floor of new developments.
If you are an enthusiastic, ambitious, Analyst/Programmer, with COBOL and possibly BASIC experience, this thriving company offers excellent rewards and future prospects.

C.V. to: Cathy Homer, P.E.R., 8th Floor, Victoria House, Ormskirk Road, Preston PR1 2DX.

(7553)

PER Executive Selection

Chr. Michelsen Institute is an independent multi-disciplinary research institute which serves industry and society in Norway and abroad. The work of the institute is financed by means of government grants and by R and D Contracts.

CMI's dept of science and technology has a staff of 105, most of whom are graduate scientists or engineers.

COMPUTER GRAPHICS/ANIMATION

Applications are invited from highly qualified and suitably experienced persons for a position in computer graphics and animation. Applications with a Ph.D or M.Sc in computer science will be preferred.

Research activities in the dept of science and technology are concentrated in the following areas:

- Powder technology, dust and gas explosions
- Instrumentation and measurement technology
- Remote sensing and image processing
- Signal processing, including seismic interpretation
- Mechanical design and precision engineering
- Electronic design

Many of our projects in these fields utilise computers for simulation, data reduction, and design purposes. In order to enhance our ability to interpret and understand computer output, we plan to expand our use of computer graphics and animation techniques. Further details of this challenging appointment can be obtained from Haakon Helland at CMI. Deadline for applications is February 20, 1984.

CMI offers competitive salaries and an attractive work-place on the outskirts of Bergen, on the west coast of Norway. The institute will assist in obtaining suitable accommodation. Applications, accompanied by curriculum vitae, should be sent to the Director, Dept of Science and Technology,
Chr. Michelsen Institute
Fantoftvegen 38
Fantoft, Bergen, Norway.
Tel: + 47 5 284410. Telex: 40008 CMI N

(7575)

SOFTWARE ENGINEERS

The Full Spectrum of Development

THORN EMI Electronics
DEFENCE SYSTEMS DIVISION

With the further development of high technology Video Processing equipment, we are are looking for Team Leaders and Software Engineers: people who need an outlet for their innovative and technical abilities. The work is demanding and exciting with scope to progress within the organisation for ambitious and talented individuals.

Based at Feltham, or our new facility being established at Woking, Surrey, you will be involved in the very latest developments of video processing equipment, utilising an excellent array of design tools. Experience of working on high speed, real time systems using minis and micros, particularly PDP11 or VAX using CORAL, or INTEL 8086 using Assembler is desirable.

These unique positions command salaries of £8 -£14K with excellent large company benefits.

Write or phone for an application form to Judy Ball, THORN EMI Electronics Ltd., Defence Systems Division, Victoria Road, Feltham, Middx. Tel. 01-890 3600 or 01-751 0702.

There are a few people who could make Isaac Newton turn in his grave...

They are the professionals who through one simple quality, ambition, can put paid to the theory 'what goes up must come down'. This sheer determination to get ahead keeps their careers progressive and optimises the scope of their responsibilities. But they need the right environment.
In only a few years HAL Computers Ltd have grown through a policy of high standards, aggressive marketing and a commitment to use some of the best products to become the largest independent peripheral distribution houses in Europe. Few other companies can rival their success or opportunities. If you want to get to the top and have the ability this is the company where you will find the head room.

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This key role is concerned with developing and servicing their continental sub-systems distributorships, making full use of a first class product range and excellent technical back-up.
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They say that you can't keep good professionals down; this is a company that wouldn't want to.

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£ Excellent + Generous Package

You will be joining a company that thrives on technical excellence and that will expect you to achieve a similar standard, customising products to meet their clients needs. In your mid twenties with good communication skills and business acumen you are likely to have gained your expertise of Apple or IBM PC operating systems in a small software house.

So if you are really ambitious call
Richard Nash on 01-734 9723 or 01-581 5829
Evening & Weekends.

CTR Computer Technology Recruitment Limited *Triumph House, 189 Regent Street, London W1R 7WD.*

… NEW IBM Installation

Systems Programming Manager

West Midlands (Full Relocation)

to £15,500 + 2 lease cars + benefits

A new Company has been established to provide a Parts and Equipment distribution facility for one of the UK's leading Manufacturing Organisations. From a prestigious base on the South East Boundary of Birmingham, the Company will provide an autonomous service centred on IBM hardware – initially IBM 3031 AP under MVS using TOTAL and ENVIRON 1. A Management team has been recruited to provide the impetus to a challenging systems development plan to cater for the needs of the business.

A key position exists for a **SYSTEMS PROGRAMMING MANAGER** – to head a team engaged on technical support to the installation. This important post calls for a strong technical knowledge of IBM MVS environments including database and telecomms (ideally TOTAL/ENVIRON 1 CICS). Areas of responsibility will include Databases, Personal Computing, Operating Systems, as well as planning future technical enhancements to the installation. Candidates should possess the ability to combine technical knowledge with effective man management skills and be able to contribute to the forward planning of the Company.

The installation is located in an attractive area close to the green belt and surrounding areas provide a large choice of housing prices and styles.

An excellent salary will be paid, enhanced by 2 leased cars under a Management Car Plan, and medical cover through BUPA. Comprehensive and generous relocation assistance is available to this delightful area with easy access to the rural countryside of Warwickshire and Worcestershire.

To apply please contact the Advisers to the Company, **Grahame Murphy** or **Martin Stainthorpe** on **021-236 3781** (24 hour answering service) or 021-778 2974 till 9.00 pm evenings.

Technical, Sales & Management Appointments

SCR

Specialist Computer Recruitment Ltd

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MIDLANDS & INTERNATIONAL: 35-37 Great Charles Street, Queensway, Birmingham B3 3JY. 021-236 3781
NORTH: International House, 84 Deansgate, Manchester M3 3EE. 061-833 0427
BELGIUM: Avenue Louise 327, Boite 4, 1050 Bruxelles. 010 322-640 7161/71
HOLLAND: Willemsparkweg 92, 1071 H.M. Amsterdam. 010 3120-760947

Systems Programmers

Attractive five figure starting salaries plus relocation assistance

Rural Essex

Our Client is one of the largest IBM users in the UK, running an expanding nationwide teleprocessing network of over 1,800 terminals and RJEs, from two major IBM Data Centres, one of which is located in a pleasant, rural area of Essex.

The site maintains an impressive configuration comprising IBM 3033 and Amdahl V7 mainframes running MVS/JES2, IMS DB/DC, CICS/DL1, VM/CMS, RAMIS, NCP, VTAM, MSNF, and TSO/SPF. A hardware upgrade, possibly involving the installation of a third large mainframe and migration to MVS/XA are planned for this year.

In such a progressive environment, opportunities for career progression are excellent. Openings currently exist for Systems Programmers with varying levels of experience, who seek broader technical involvement with the very latest in IBM systems software.

Applications are therefore invited from Systems Programmers with at least twelve months experience, ranging up to Senior Systems Programmers, where at the more advanced levels, specific skills in perhaps VTAM or IMS would be especially welcome.

Whatever the length or breadth of your experience, our Client is keen to discuss the future with you and, in simple terms, will pay you what you are worth.

Apart from superb career prospects and involvement with the latest IBM hardware and software in a developing site, you will benefit from on-going training and excellent working facilities in a new and well equipped Computer Centre, situated in clean, rural surroundings, away from the 'commuter crush', yet only 35 minutes by rail from London and within easy reach of the popular East Coast resorts.

For Systems Programmers looking for room to develop their careers in a large and well resourced IBM environment, our Client offers unrivalled opportunities for personal and technical development. If you wish to refresh your career, start by sending your c.v. to **Ian Payne** at the SCR Birmingham office, giving details of current and expected earnings, home and work telephone numbers (to be used with the utmost discretion) who will arrange to meet with you in confidence at SCR offices in either London, Birmingham or Manchester to suit your convenience.

Technical, Sales & Management Appointments (7813)

SCR

Specialist Computer Recruitment Ltd

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NORTH: International House, 84 Deansgate, Manchester M3 3EE. 061-833 0427
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You will undertaka feasibility studias end provida advica on the selection of hardware and software and the subsequent Inetelletion planning and implementations. As you will also be developing requirement spacifications you must heve e thorough understanding of all aspects of DP with the ebility to communicete with all levels of management. Previous consultency experience would be advantageous. The companies ere located, meinly, to the North of London and there will be some travelling.

Salary is negotiable eccording to experiance end will be accompanied by a generoue benefits packaga which includes a non-contributory pension, group BUPA schame, eubsidisad restaurant, and after a qualifying period, loan and mortgage facilities.

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ANALYST/ PROGRAMMERS

IBM SYSTEM 34/SYSTEM 36

Croydon/London £8,500-£11,000 plus large company benefits

Our client, a multinational blue chip organisation requires additional System 34 professionals to meet their current expansion plans, which include upgrading to System 36.

The successful applicants will have a minimum of 3 years RPG II experience on System 34 and/or System 36 in a distributed processing environment.

The company offers excellent working conditions and benefits which include four week's holiday, free life assurance, non-contributory pension scheme, restaurant facilities.

(7820)

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Tel: 01-686 5656

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logistix Logistix Recruitment Limited
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Telephone 01-373 3063

Software Tools

Central London: Salaries to £18K

Software Designers and Managers, with at least four years experience in software design and development, are urgently required to join our clients newly created team. As this leading Systems and Software House is aiming to utilise a variety of tools and methods in their software environment, specific experience is less important than high basic ability and a strong interest in improving the development process. However, candidates who have developed Programming Support Environment (e.g. APSE), Software Productivity Aids or Project Management Tools will be of particular interest. Although these positions will be extremely demanding, job satisfaction will be high and successful candidates can be assured they will remain at the forefront of software methodologies. Ref: L/5/A

Comms Software

Overseas: Package to £22K

An internationally renowned Systems House and Computer Manufacturer has recently launched a range of Data Communications and Networking Products and is, therefore, seeking additional Programmers and Designers. Suitable applicants should hold a numerate degree and have at least three years relevant post-university experience with either a Systems and Software House or mini/micro computer manufacturer. In particular, you will be expected to have an in-depth knowledge of Data Communications, Networking Systems (LAN's or WAN's), communications protocols (X25, SDLC/HDLC) or office automation systems. Successful applicants will undergo intensive product training at the Company's Copenhagen Head-Quarters and, thereafter, you will be based in USA, Singapore or an EEC country. Ref: L/5/B

Micro Applications Consultants

London and E. Midlands: Salaries to £25K (O.T.E.)

Profile: Keen Computers Ltd is a leading supplier of UNIX based systems and networks (in particular OMNINET) and is again poised for a period of planned growth in 1984. The Company has recently established a network of nationwide service and support centres with its Regional Head-Quarters based in The City and Nottingham and support outlets in Bristol, Manchester and Slough.

Personnel: Applicants aged 25-35 years should have practical programming, systems analysis or design experience gained in a commercial environment. Your programming background must include fluency in two or more of:– PASCAL, CIS COBOL, 'C', FORTRAN or Business BASIC. Of particular interest will be those who can combine a sound knowledge and proven experience of applications software in such areas as word processing, database management, operating systems and communications software. Candidates who are familiar with UK accounting practices are also encouraged to apply.

Job Content: All positions entail a significant degree of client contact in the form of product demonstration, seminars, in-house and on-site client training, and post-sales support. Well developed inter-personal skills are therefore essential. A willingness to travel within UK as and when necessary is also of paramount importance.

Rewards: Earnings will only be limited by your ability since in addition to a very competitive salary, our clients offer an outstanding sales and performance related bonus scheme. All positions carry a generous car allowance or company car.

Applications: Please forward a well documented resumé or alternatively telephone one of our Consultants quoting **Ref: L18/10.**

Graduate Programmers

London & H. Counties: Salaries to £8.5K

A number of exciting opportunities have arisen in London and the Home Counties for Programmers who graduated in 1982 or 1983. You should hold a first or second class honours degree in Computer Science, Mathematics or Electronic Engineering and, of particular interest, will be applicants who additionally hold an MSc. It is essential for all positions that you offer fluency in PASCAL, 'C', ADA, PROLOG, LISP or Assembler. Ideally your project work and/or subsequent experience should include compiler writing, expert systems, firmware development or UNIX. Ref: L/5/C

Real-Time Systems

Dorset: Salaries to £16K

The recently created subsidiary of a major Systems and Software Consultancy has a number of vacancies for Real Time specialists from Programmer to Project Leader level. Current projects include the development of C^3, packet switching and guided weapons systems for both UK and overseas clients. Their requirement is for candidates who have been engaged on the development of real-time systems utilising high level, block-structured languages such as Pascal or RTL/2. Alternatively, our clients will consider those with a micro-Assembler background or fluency in Fortran, especially if supplemented by exposure to a structured development environment such as MASCOT. Ref: L/5/D

VAX/FORTRAN Progs

London: Salaries to £12K

An International Systems Company specialising in the development and marketing of communications software is seeking additional Programmers and Designers for its London Headquarters. Candidates, aged 22-27 years, should hold a numerate degree and have a minimum of twelve months FORTRAN programming experience, preferably gained in a PDP-11 or VAX environment. Application areas of interest include Office Automation, Viewdata and Prestel, Data Communications and Distributed Processing. Since these positions entail a high degree of client liaison, you should possess excellent personal communication skills and be prepared to travel both nationally and internationally. Ref: L/5/E

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WORLDWIDE COMMUNICATIONS SYSTEMS

Project Managers

£16,500-£18,500 + car

LONDON BASED

Our client, with development headquarters in London, was established more than a decade ago and is currently a market leader in the Financial, Banking and Trading areas.

The Company are looking for Project Managers for their Communications Development Group to enhance their existing highly successful operations and, at the same time, establish a new generation of software to service its worldwide client base through its Operating Companies in the USA, Far East, Middle East and Europe.

Systems are presently based on DEC PDP11 and VAX hardware but future strategy is to make the software portable and therefore implementable on other CPUs.

Products include a range of International Banking Systems with a sophisticated interface package linking into the S.W.I.F.T. and other International Networks – they also have a store-and-forward message switching system which manages communications over Telex, Telegraph, PSS and Private Line Networks.

The successful applicants may be drawn from a wide range of backgrounds, but must have realtime or online development experience in a communications environment, be highly motivated individuals and able to work on their own initiative. They should also be willing to travel, both in the UK and overseas.

This is an ideal opportunity to influence the direction of future products, to grow with an expanding international organisation, and to be responsible for the design and implementation of their next generation of communications developments.

For further information, please contact Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947, from 8am to 10pm Monday to Friday, or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4579, quoting REF 5040.

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...with Systems Analysis ability
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This interesting job at Wilson's Brewery demands a competent and intelligent computer operator with the ability to progress quickly towards the analysis, design and implementation of micro based projects.

We currently use Data General Eclipse and Nova minicomputers and a range of IBM and Apple microcomputers.

Aged around 25 you should have a good academic background (degree/National Diploma) and sound training in Management Services, Systems Analysis or programming.

A two shift system is being worked – for which a shift premium is paid.

An attractive salary is offered together with a discretionary bonus and the usual benefits associated with a progressive company.

Write with full career and salary details to:
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Wilsons Brewery Limited, Monsall Road,
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(7586)

WILSONS

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Z-80 ASSEMBLER PROGRAMMER — **IMMEDIATE START – SUSSEX**

KPG 01-948 5922

Call Lynne at KPG 01-948 5922 or 01-543 4140 (Evenings & Weekends)

(7515)

ANALYST/ PROGRAMMERS

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★ COBOL/CICS – IBM DOS/OS – Financial/Accounting & Manufacturing Applications

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Similar vacancies exist in non-software house environments – Contact Paul Townsend for details

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★UNIX & C to £14K
Software Manager required to expand small business systems (16 bit micros) and to co-ordinate dept.

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£8,000+ p.a.

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The position involves user liaison, the writing of new systems and maintaining of current systems.

Benefits include 22 days holiday and pension scheme.

Please telephone Roger Strong, Computer Manager, on 01-640 1151.

(7498)

PCL

A MEMBER OF THE SGB GROUP

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Network Support with Tymshare

Tymshare Network Systems, a world leader in Packet Switched Data Communications Networks, is inviting applicants for the position of Network Operations Supervisor. Duties include: Operations, Software and some Hardware Support for a number of installed data networks. Close liaison with customers will feature strongly. Applicants (28 years or older, and willing to be located within 20 miles of Wembley) should possess at least 5 years experience of Hardware and Software Support in either the DataComs or Computer industries. Academic qualifications would be an advantage. Salary is in the region of £13,000 with the use of a company car.

Vacancies also exist for Field Engineers.

(7547)

CV's should be sent to: Mr M Walters,
Tymshare Network Systems, Station House,
Harrow Road, Wembley, Middlesex HA9 6EB.

CONSIDER HOW MUCH WE CAN OFFER YOU

As the Software Services Division of the UK's largest and most successful mini and mainframe manufacturer, our organisation offers you exceptional opportunities. In order to cater for the ever increasing demand for our services, we are, once again, seeking to recruit the highest calibre of D.P. Professionals to join our elite team.

In exchange for your valuable skills, we offer the opportunity to work with superb technical resources, many still unannounced, at the leading edge of major D.P. developments in the commercial world, first rate remuneration and a career structure designed to capitalise on your particular talents.

You will be based in either our Birmingham or Reading offices, but a major and attractive feature of these posts is the requirement for mobility – and the opportunity for travel overseas from time to time.

PROJECT MANAGERS c.£15,000

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If you possess the experience to control projects in either of the following environments, adhering to the high quality assurance standards expected from us, this is your opportunity to enhance your career aspirations.

ICL 2900 VME IDMSX CAFS QUICKBUILD
ME29 TME TP IDMS OMAC

IDMS DATABASE DESIGNERS c.£12,000

Physical and logical database design is your forte. You are now looking for the opportunity of working with the very latest techniques in this field. We can offer you the challenge of designing leading edge systems for the very latest ICL hardware using tomorrow's methodology! If you have experience of database design in either of the following environments, we offer you the opportunity of capitalising on your skills and dramatically enhancing your career.

VME IDMSX DDS CAFS/ME29 TME TP IDMS DDS

Are you ready to take the lead with the leaders? Telephone our recruitment consultant and ask for Phil Harkcom on 021 643 8501 (business hours) or 021 308 4285 (eves/weekends) or fill in and return the FREEPOST coupon to Computer People Midlands, FREEPOST, Alpha Tower, Birmingham B1 1BR.

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Address.....
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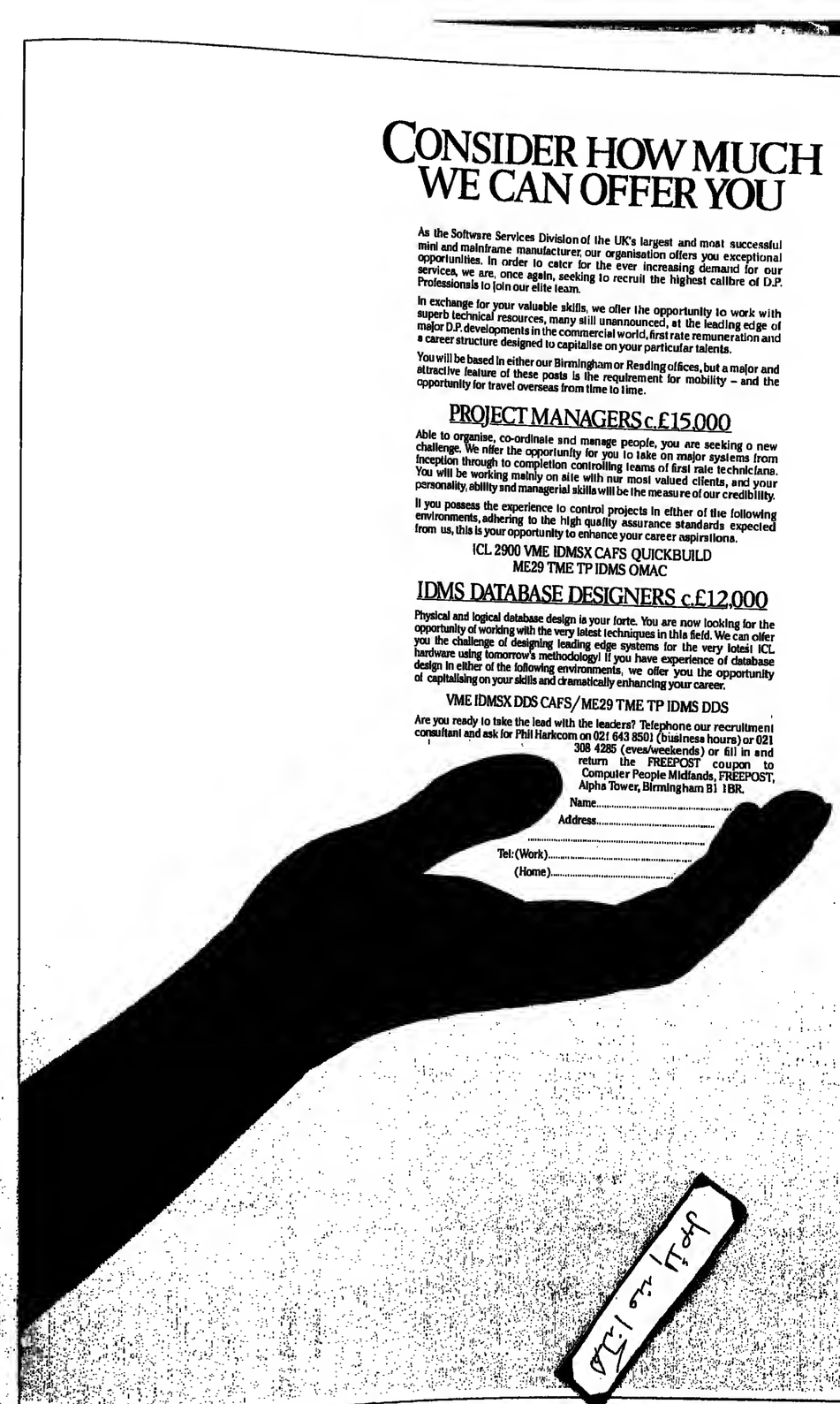
Tel: (Work).....
(Home).....



Computer People Midlands

0 061-491 1666 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA ● 01-680 6073 Computer People South, 27 George Street, Croydon CR0 1LB
● 021 643 8501 Computer People Midlands, Alpha Tower, Birmingham B1 1BR ● 01-836 0411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ● 01-836 0411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS
also offices in New York, Kentucky and Los Angeles

The Market Leaders

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[7683]

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MANAGEMENT & EXECUTIVE SELECTION

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c£20,000 + car

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- The internationalisation of softwere products, developed both locally and in the USA, on a country-by-country basis.
- The provision of strategic, technical and commercial input in the development or acquisition of software products.

As the successful candidate you will probably be educated to degree level. You will have a strong technical background preferebly gained within a multinational supplier of semi-conductors/electronics/computers/peripherals or software.

The role demands en in-depth understanding of operating systems and compilers.

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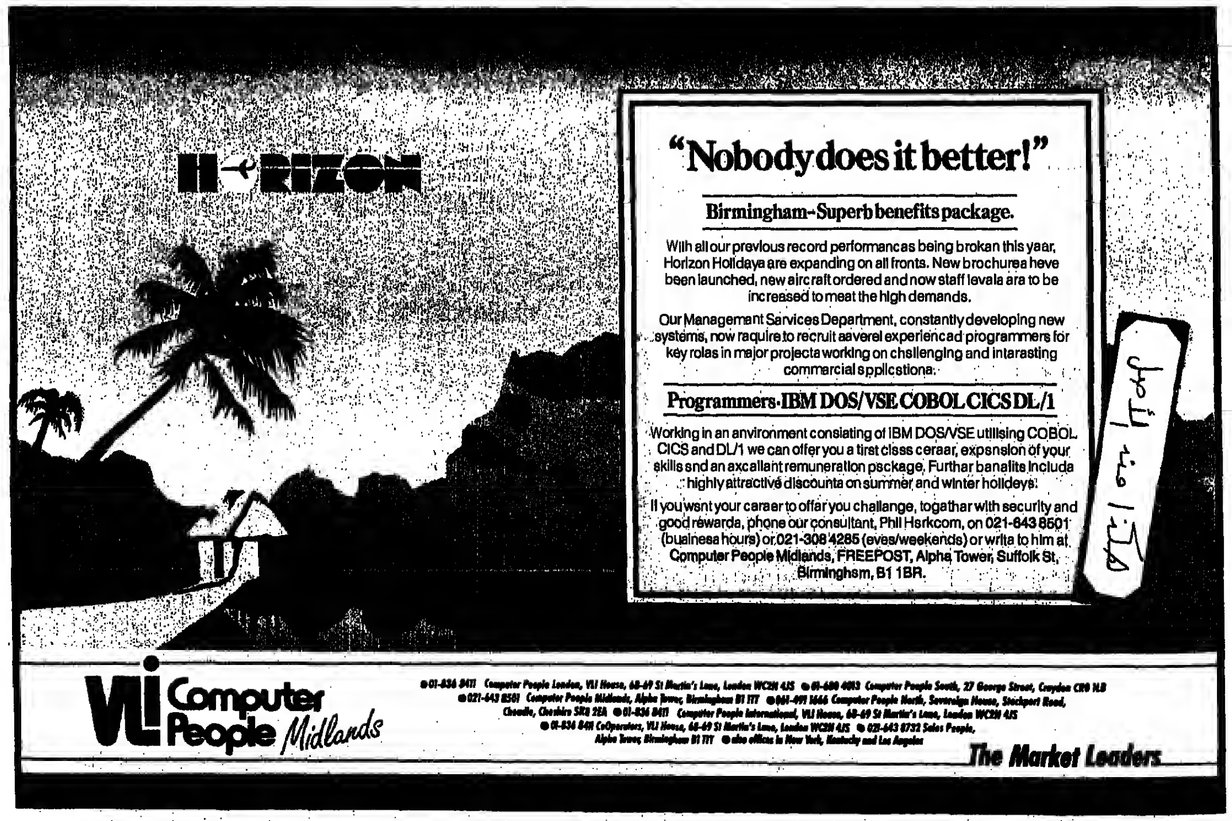
For further information please contact Tony McGrath or Karen Whelan on 01-637 9611

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

[7681]



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c£11,000

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The company can in future offer you:

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Will work on new programmee and current systems. Installation consists of two Wang VS-100s, with a wide variety of applications.
Hours 9am to 6pm. Salary £9,079 pa.
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[7644]

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Scottish Provident's data processing is carried out mainly on a Burroughs medium systems machine but use is also made of mini computers and key to disk equipment.

Salary will fully reflect qualifications and experience. Other benefits include a non-contributory Pension and Life Assurance Scheme and a very attractive Staff House Purchase Scheme.

Please apply in writing with full personal and career details to
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SCOTTISH PROVIDENT

N.C.R. EXPERTISE

Birmingham and Bridgwater is a major building society with assets approaching £450 million and over 70 branches serving the Midlands and South West of England.

We have recently upgraded our mainframe to an NCR V8675/II running under VRX, and are about to embark upon an extensive development programme to introduce counter terminals into all our branches. This has created the following attractive career opportunities.

PROGRAMMER/ANALYST £8,300-£9,590 p.a.
(Review pending)

The successful applicant will play a major role in the investigation, design and implementation of new systems and must possess the ability to communicate effectively with all levels of user. A knowledge of on-line techniques and/or database principles would be an advantage.

PROGRAMMERS £7,000-£8,050 p.a. (Review pending)

Candidates should have at least twelve months' in-depth experience of either NEAT/3 or COBOL.

An exciting career is offered to DP professionals who are prepared to work on their own initiative and accept the responsibilities these positions demand. In addition to a competitive salary structure, these positions also offer the following benefits:

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53/57 Wake Green Road, Moseley, Birmingham B13 9HX

BIRMINGHAM BRIDGWATER
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CONTRACTORS

IBM

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IBM MVS PL/1, IMS DB/DC ANALYST/PROGRAMMER
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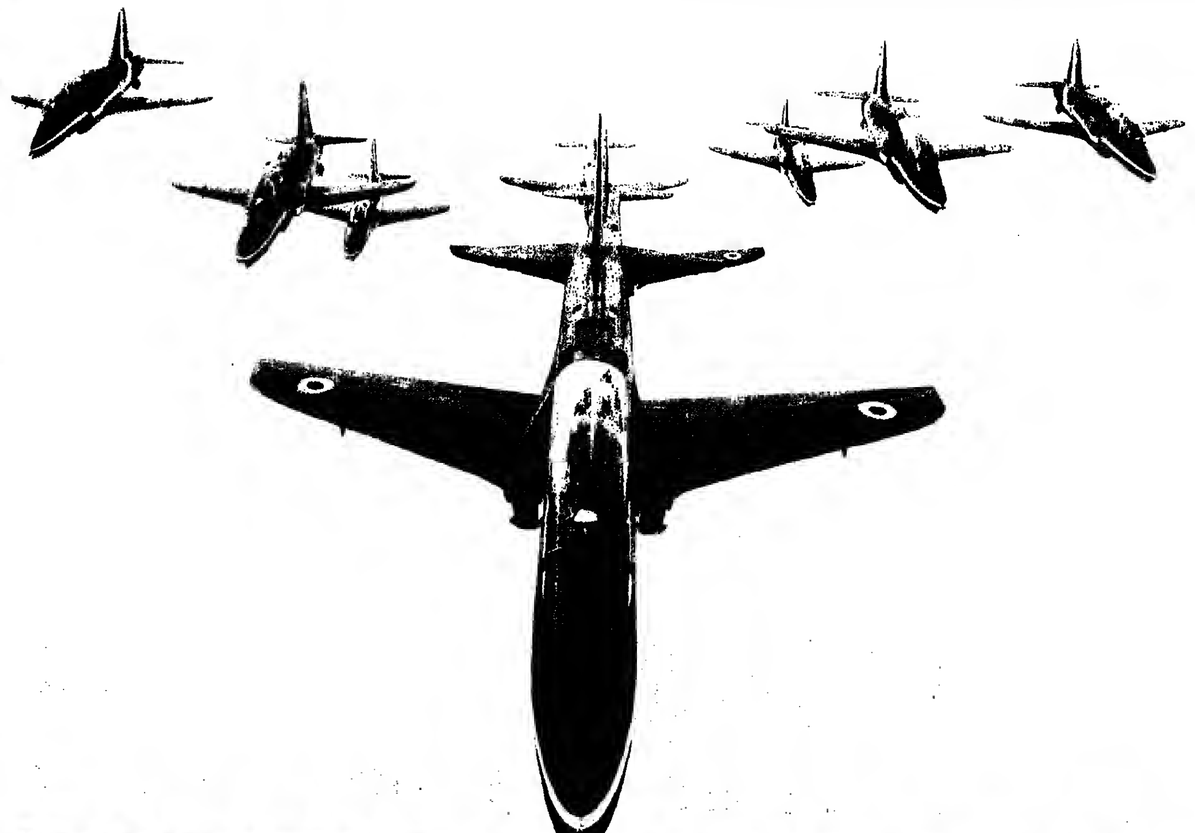

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The **SYSTEMS PROGRAMMER** should have 3 years' computing experience, the last 18 months of which should have included working with and installing Sperry software — the Company currently uses CMS, DMS, and TIP. An interest in the new technologies especially micros and mainframe and micro connection would be useful. Further training will be provided where required.

The **TRAINEE SYSTEMS PROGRAMMER** should have 18 months' experience with some exposure to Sperry software. The Company will be looking for enthusiasm to progress in these areas as well as an interest in the new technologies. Training will be provided as necessary.

The jobs will be based in our modern Northampton HQ complex where squash and swimming facilities are provided. Housing in the Northampton area is very reasonably priced, alternatively a Development Corporation rental can be arranged.

Please write with full career details to:
Martin Jones, Robert Horne Group plc, Huntsmen House, Meneton Close, Moulton Park, Northampton. Tel. (0604) 495333

or for more details telephone Tim Hunt on the above number or on (0604) 862807 outside normal working hours.

Thu British Medical Association is e well-established end renowned public body with its headquarters in Central London between Euston end Russell Square.

A major review of current end potential applications is in hand as le hardware revision end two vacancies now arise.

TECHNICAL AND OPERATIONS SUPERVISOR
c.£12,000 p.a.
BUSINESS/SYSTEMS ANALYST
c.£11,000 p.a.

Terms and conditions of employment are above average.

Full job specifications and further information is available on request. Telephone: 01-387 4499, ext. 37.

Applications must be received before 17th February, 1984, and addressed to: Mrs Barbara Dyer, Personnel Manager, British Medical Association, BMA House, Tavistock Square, London WC1H 9JP.

(7854)

BMA

ANALYST/PROGRAMMER

MINI/MICRO COMPUTERS

£9k-£12½k — WEST COUNTRY

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We are currently committed to work in the following areas:

- ★ Text processing
- ★ Typesetting
- ★ Graphics
- ★ Mathematical formulae

Interset has now established itself as a market leader within the Printing Industry – you could play a major part in our continuing success.

If you have the talent and self-reliance we can offer a lively, stimulating environment with plenty of scope for a variety of roles.

Please contact Wyn Thomas on 0761 232606 or write to him with full c.v. to Interset Computer Systems (UK) Limited, New Rock, Chilcompton, Bath BA3 4JE.

(7430)

MARKETING PROFESSIONAL-

Your chance to communicate with a brand new market.

Racal Millicom Limited, a member of the highly successful Racal Electronics Group and based in Newbury, Berkshire, was recently formed having won the license from the British Government to provide a nationwide radio-telephone network by means of cellular radio technology. Introduction of this network represents a major and challenging development in telecommunications and the Company now seeks to expand its Marketing function to take full advantage of this development.

A Senior Marketing post exists therefore, wherein the successful applicant, reporting to the Commercial Director, will contribute to the market research, product policy testing and further application studies, together with supporting the agreed sales programmes by co-ordinating resultant advertising, P.R. and promotional campaigns.

Applicants for this new and interesting position are likely to be aged 30 to 45 years and possess considerable marketing experience in a communications or "brown goods" environment. A proven track record of achievement is required.

The successful applicant will receive a competitive remuneration package and Company car, over 5 weeks annual leave, pension and free life assurance cover. Assistance with relocation expenses will be given if appropriate.

This position offers great potential for the right person. If you think you are that person then please write, in confidence, stating age, experience and salary expectations to:
Mr. G.E. Fisher, Personnel Manager,
RACAL MILLICOM LIMITED, The Courtyard,
2-4 London Road, NEWBURY, Berkshire.

This post is open to both male and female applicants.

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Write with C.V. to: Vacancy, A.I. Transaction Security Ltd. P.O. Box 72, Guildford, Surrey GU3 3BT. Tel: (0483) 503363

(7846)

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Opportunity to join a new fast-growing company – based in Oxford Street, London – affiliated to a successful microcomputer group in the U.S. dealing with leading international brand names.

Suitable candidate should ideally be a young graduate with one or two years working knowledge of microcomputer systems. Experience in sales, technical support and customer liaison in relevant markets and some knowledge of computer programming/accounting would be desirable.

Excellent opportunity to train and grow with company.

Salary £10,000 NEG.

Please write with C.V. to A. Khoury, Oryx Systems, c/o 85 Pier House, Oakley Street, London SW3 5NH.

Credit Suisse First Boston Ltd, a major International Investment Bank based in the City, require the following experienced people to work on their twin VAX-11/780 installation.

Systems Development Technician

The Systems Development Department requires a highly experienced technician with substantial VAX COBOL knowledge to guide the structural design of banking application systems, and to provide general technical support to the bank's programmers. User-related experience of VMS with COBOL is mandatory and banking application knowledge would be helpful.

Information Support Designer/Programmer

The recently-formed Information Support Services Department requires a broadly-based Designer/Programmer to work closely with end-users in investment management and security trading. The primary need is for someone to assist these users to get results from the computer quickly. The necessary programs may be written conventionally in COBOL, bought-in as packages, or built using fourth generation techniques such as query languages, modelling packages and application generators: the successful applicant will be expected to participate actively in the evaluation and selection of such techniques. Candidates must have a substantial record of personal success in implementing complete working systems.

VAX Designer/Programmers

Two results-orientated Designer/Programmers are required for their twin VAX-11/780 installation in the City.

A competitive salary will be offered for all of the above positions along with generous banking fringe benefits. Please write with full details to: Angela Cellan, Credit Suisse First Boston Ltd., 22 Bishopsgate, London EC2.

(7522)

CSFB

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ANALYST/PROGRAMMER AND PROGRAMMER

Central London — **Up to £14,000+**

Trident Television plc is expanding the use of its Honeywell computer facilities in the Casinos division of the Group. All the development work is to be carried out in-house, and applications cover a wide range of specialised and commercial systems.

Analyst/Programmer should have had 3-4 years programming and analysis experience, some of which must have been on a Honeywell DPS4.

Additional staff are required to assist in all aspects of this development work, which includes the use of mini-computers in the more sophisticated areas of operation. A network of 17 remote terminals is connected to the Honeywell DPS4 mainframe computer.

Programmer should have had a minimum of 18 months programming experience, of which part should be on a Honeywell DPS4.

An attractive salary plus a wide range of benefits are offered for these important positions.

Please apply in writing with full curriculum vitae to Jane Blackmore, Trident Television plc, 29 Farm Street, London W1X 8AA, or telephone 01-493 1237 ext 311 for an application form.

(76391)

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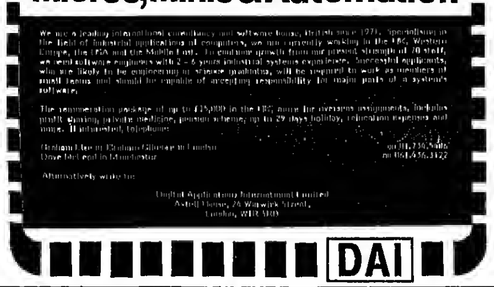

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01-493 2947 (office) or 01-390 1640, 7-10 pm. Ref: 5080

(75411)

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SYSTEMS DEVELOPMENT

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Starting salary range will be c£10,000, with progressive increments. Benefits include non-contributory pension and life assurance, free BUPA and relocation help to this attractive area.

Our system is based on a Honeywell DPS4, using release 1.10 with IPS and our language is COBOL.

Dan-Maid Seafoods

For further details please ring or write to: Alan Mundy, Flying Goose Limited, Barrow House, Bishopstrow, Warminster, Wiltshire BA12 9HU. Tel: (0985) 214565.

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The Department uses several powerful minicomputers in specialist areas, but the major thrust is in the IBM/MVS environment utilising the full range of Cullinet integrated software with distributed personal computers. The Anglo American Corporation is the largest within South Africa and the immense scope of the Group's interest provides a unique applications portfolio that extends across mining, commerce, finance and engineering.

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These positions represent challenging opportunities within an Organisation capable of offering good career paths into higher levels of management or promotion to Senior Technical Specialist positions.

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Final interviews will be held in early March, to find out more you should make immediate contact with **Martin Stainthorpe** on **021-236 3781** (24 hour answering service).

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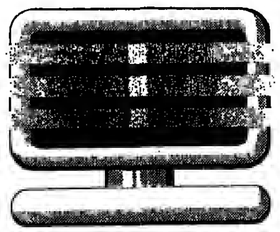

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Powerful Solutions are what we provide to our users, and these are what we can provide to your career.

Solutions in terms of: **Company Success** – probably the fastest growing computer company in the UK; **Product Range** – local area networks, our much acclaimed 32 bit minis, and our pioneering Natural Language, fifth generation systems; **Salary Package** – a realistic £27-£29,000 with excellent basic.

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You will probably be currently working for a major computer manufacturer or systems house with a solid sales track record of not less than two years.

Powerful career solutions exist in our specialist sales teams for local and central government, health care, defence, and general commerce.

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Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

(7564)

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PERMANENT SELECTION

Systems Programmers West Germany
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This progressive company with offices in the UK and Europe are seeking Systems Programmers to become part of a systems and software support group in West Germany.
Expertise is required in: MVS, CICS or VM DOS · VSE or MVS, VTAM, IMS or VM, CMS, CICS

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To £18,000 + overseas allowance

IMS DB · DC and fluent knowledge of German is required to enable you to control work teams of English and German staff involved in development, maintenance, conversion and problem solving.

Analysts and Programmers W.3.
£8,000-£13,000

Our client wishes to recruit a number of personnel to work in their IBM environment on a large variety of development projects. Analysts are required to have minimum of 4 years' analysis with a programming background. A minimum of 18 months' work experience is desired for the programming positions with ability in COBOL and/or ASSEMBLER.

Programmers to Analysts E.C.1.
To £12,800

This leading telecommunications company is moving forcefully into the UNIX market and wishes to recruit personnel with COBOL and mini machine experience to work in their UNIX development team. **FULL TRAINING.**

RPG2 or RPG3 Programmers and Analyst/Progs
£NEG All Areas

We have a large number of clients offering solid salaries and promotion prospects for individuals with a minimum of two years' experience.

Sales Support/Development Sunbury
Neg £15,000

If you have experience in sales along with staff and user management as well as a mainframe and programming background, here is your opportunity to head the sales support/development side of this well established company.

Senior Programmers Surrey
To £11,000 + mortgage subsidy

Successful applicants for these lucrative positions require a minimum of two years' on-line experience using structured programming with COBOL in an IBM environment.

Analysts and Business Analysts All Areas
£8,000-£18,000

We currently have a wide variety of positions for people wishing to advance their careers in companies with good prospects for the right individuals.

Programmers Herts
To £10,000

BASIC + 2 programmers with a minimum of three years' experience on PDP or VAX machines are required to work for a well known travel company on development projects. **TRAINING GIVEN WHERE NECESSARY.**

Call Sue Newman

for a confidential discussion

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Resources International Ltd, 18-19 Sandland Street, Bedford Row, London WC1R 4LL

(Europe)

c. £23K negotiable + Car UK Based

Due to increased world demand for complex software tools our client, a recognised International leader in communications products, currently seeks to expand the UK management team. Their growth has created exceptional opportunities for software professionals to apply a diverse range of skills in terms of management, technical leadership and international team direction.

Ideally you will be: –
- Aged 30-50
- Educated to Degree level
- Able to demonstrate extensive software development management responsibility in a disciplined environment
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The positions will be tailored to reflect the particular specialisms of successful candidates within this challenging and stimulating environment. Experience and skills needed will include product definition and design, technical direction and development, user interface and multi-skill team appraisal. Success will depend on the direction and integration of input from both the UK and European software teams.

Management career development is exceptional within this key group and the benefits package includes excellent negotiable salary, executive car, full relocation package and many other large company benefits.

For a confidential discussion call Bob Archibold on Newbury (0635) 33445 quoting reference M/164 or write in strict confidence to: –

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Our client has one of the world's largest and most sophisticated complex of linked Data Centres and Information Centres. They contain a number of interlinked IBM 3030s, 3080s and 4300s at the heart of a large network. There are also a number of attached mainline and minitels for stand-alone and remote multiplexed subsystems to maintain the thrust of new development. The company has urgent requirements for:

FOCUS SPECIALISTS

Analysts/Programmers – Systems Analysts

SYSTEMS & PROGRAMMING

PROGRAMMERS IBM PL/1 — **to £12,000 LONDON**

Are you looking for a stimulating career path in an On-Line Database environment where major new systems are being developed? If so, opportunities exist within the Systems Development Teams for Programmers with a minimum of 1 year's PL/1 experience. TRAINING in CICS and DL/1 given. Excellent perks include flexitime, 3 salary reviews a year and pension scheme.

AN/PROGS IBM COBOL — **to £13,500 W. LONDON/MIDDX.**

Work on a New Development Project. Our client, an international fast moving organisation, seeks to recruit Analyst/Programmers to be involved in the development of a new financial package. Company retains IBM 4300 running under MVS using COBOL CICS and DATABASE, along with various minis and micros. They offer variety, TRAINING in ANALYSIS, CICS & DATABASE, and development work. Applicants should have a minimum of 2 YEARS' IBM COBOL and be able to demonstrate enthusiasm.

AN/PROG MICRO ASSEMBLER — **to £14,000 LONDON**

We are currently seeking a Senior Analyst Programmer who has a minimum of 2 YEARS' ASSEMBLER with some exposure to COBOL, preferably gained in a MICRO environment. This is a leading position and offers responsibility for a large development area. The company also retains large IBM mainframes and minis and thus offers successful candidates the opportunity to gain varied experience with excellent promotion prospects.

AN/PROGS & PROGS ICL COBOL — **c.£10,500 MIDDX**

Are you tired of commuting to London? Why not work locally? This well-known National Company with a progressive attitude could be exactly what you are looking for. They retain ICL ME29 hardware with TME, NTS and DMS using COBOL. If you have ICL COBOL experience and are seeking a challenging position phone now for further details.

AN/PROG IBM COBOL — **c.£13,000+MORT. LONDON**

Are you looking for a challenging position plus early promotion prospects. This leading International Bank in London seeks a confident individual with 2 years' IBM COBOL and preferably some involvement with CICS. They retain IBM 4300 hardware running under DOS/VSE using COBOL CICS and DL/1. You will be offered financial development projects, super working conditions and excellent perks including subsidised mortgage.

PROGRAMMERS IBM COBOL — **to £12,000 LONDON**

Are you eager to develop new skills? This international company can offer TRAINING in CICS and DL/1. Applicants should have 18 months' IBM COBOL preferably with MVS, TSO, SPF and VSAM in a commercial environment. Our client is embarking on new development projects and can offer excellent career prospects. If you would like to work in this progressive environment phone now.

AN/PROGS VAX FORTRAN or COBOL — **c.£13,000 LONDON**

To join this expanding progressive company you will need to have experience in VAX/VMS COBOL OR FORTRAN with good knowledge of a DATABASE. The company is involved with Electronic Publishing/Typesetting and experience of general scientific applications would be useful together with an interest in text handling applications.

SYSTEMS PROGS VAX MACRO — **£EXC + MORT. LONDON**

This International Financial Company based in the City can offer a high salary and full banking benefits for the successful candidates. You will need at least ONE YEAR'S VAX/VMS Systems Programming and ONE YEAR'S MACRO experience. Ideal applicants will have been involved with Systems Design and Implementation in a VAX/VMS environment. Phone now for further details.

AN/PROGS & PROGS IBM COBOL — **to £14,000 LONDON**

Variety, opportunity, responsibility and security from a company dedicated to growth. If you are looking for responsibility and early promotion this leading Software House/Consultancy can offer you the rewards you deserve. In return do you have a minimum of 2 YEARS' IBM COBOL with at least 8 MONTHS' CICS. This experience plus enthusiasm will be the key to your future.

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ICL SYSTEM 25

Our client, based in the Northern Home Counties, is a successful Systems House specialising in bespoke software for clients nationwide. They are now seeking to add to their highly successful team by recruiting the following people:

Development Programmer
£8½k – £12k

The successful applicant will have had 12-18 months experience on the System 25 and will preferably have also worked on the System 10. This is a senior position in a team engaged on development work within a variety of applications.

Systems Designer
£10k – £12k

With a solid background in design and analysis on the System 25, the person appointed will be responsible for developing bespoke systems and for designing solutions to clients problems that maximise the efficiency of the system. An ability to communicate effectively at all levels is essential. A Company Car is allocated to those who assume Management responsibilities.

If you want to join an expanding and highly successful organisation where you will be encouraged to develop your talents to the full then contact:

Lesley Thompson or Melanie Lindeman on 01-499 7761 daytime or 0494 31025 after 7.00pm.

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(7652)

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The ideal candidates should have proven D.P. training experience aligned to skills in one or more of the following areas: Course Structuring and Development, Audio and Visual Techniques, or Computer Based Training (CBT).

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(7642)

SYSTEMS + PROGRAMMING

MVS SYSTEMS PROGRAMMER
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International bank in the city seeks an MVS Systems Programmer with experience of installing and maintaining MVS. Benefits include MORTGAGE subs., low interest loans, and n/c pension. Ref. M2407

SENIOR SYSTEMS ANALYST
BEIIK5. **£13,000 + MORTGAGE**
As a result of recent conversion to IBM hardware, this international financial concern wishes to recruit a high calibre IBM Senior Systems Analyst. You will be supervising a project team monitoring progress and designing online systems. Benefits include MORTGAGE subs. and n/c pension. Ref. M2408

PROGRAMMERS AND SENIOR PROGRAMMERS
CENTRAL AND GREATER LONDON **to £13,000 + CAR**
Successful software house is seeking to recruit several programming professionals to work on a variety of interesting projects at their prestigious client sites. Applicants should have a minimum of 18 months' COBOL experience. Ref. T2313

ICL OPPORTUNITIES
LONDON AND HOME COUNTIES **to £13,000**
We currently have a number of clients seeking to recruit ICL professionals. Opportunities exist within banking, manufacturing, commercial and turnkey organisations. All positions offer short-term benefits and long-term prospects. Skills particularly in demand are knowledge of database and online techniques. Ref. D/Gen

HP3000 SENIOR ANALYST/PROGRAMMER
CITY **to £13,000**
City company embarking on a new project wishes to recruit a Hewlett Packard Analyst/Programmer to join their small but progressive team. The successful applicant will have three-four years' HP3000 experience and good analysis skills. Excellent opportunity for the right candidate. Ref. T2399

BASIC ANALYST/PROGRAMMER
ESSEX **c £12,000 + BENEFITS**
Professional commercial organisation with long term development plans is seeking to recruit a capable Analyst/Programmer with a good knowledge of Micro BASIC Scope for involvement with a variety of interesting projects as a member of a friendly and expanding team. Ref. Q2405

SYSTEMS ANALYST
SURREY **£12,000 + BENEFITS**
Leading UK company replacing batch with new real-time systems seeks to recruit an experienced Analyst to work as an integral part of their development team. Benefits include n/c pension and BONUS. Ref. T2382

SYSTEM 34 ANALYST/PROGRAMMER
BERKS. **c.£12,000**
Progressive commercial concern is able to offer continuous challenge and involvement to an experienced Analyst/Programmer with a thorough grounding in both System 34 and RPGII. Some European travel. Ref. Q2203

FORTRAN PROGRAMMER
SOUTH HERTS. **£Neg**
Leading computer services company wishes to recruit an experienced FORTRAN profosional to assist in their expansion programme. Excellent salary and opportunities for European travel. Ref. T2409

IBM COBOL ANALYST/PROGRAMMERS
ESSEX **£9,500-£12,000**
Due to further computerisation of financial systems, this Essex-based manufacturing concern has a requirement for IBM Analyst/Programmers. Applicants should possess 18 months + IBM COBOL expertise. Training as required in CICS, DL/1 and Analysis. Excellent career prospects and occasional overseas travel. Ref. M2236

IBM COBOL PROGRAMMER
CITY **£11,500 + MORTGAGE**
This financial concern retaining an IBM 3033 under MVS requires an IBM COBOL Programmer with two years+ experience. Working within a project team, the successful candidate will be involved in online applications development. Benefits include MORTGAGE subs., low interest loans, n/c pension and BONUS. Ref. M2374

RPGII/RPGIII
C. LONDON **c.£11,000**
Due to consistent expansion, this leading systems house is currently seeking RPGII/III professionals with a minimum of 18 months' experience, preferably gained on GSO hardware. An ideal opportunity to broaden your experience within a purely development role. Ref. D2396

ICL TPS PROGRAMMER
CITY **to £10,500**
Outstanding opportunity for a Programmer with six months+ TPS experience to join a major insurance company. Long term development plans and excellent career prospects for the successful candidate. Ref. D2404

RPGII – RETRAIN TO RPGIII
CITY **c.£10,000 + MORTGAGE**
Unique career opening for a competent RPGII Programmer with a minimum of 18 months' GSD experience to retrain in RPGIII and move into the exciting world of international banking. Excellent prospects and full range of banking benefits including a MORTGAGE subsidy. Ref. D2406

CONTRACT

IBM CICS COBOL	PROGRAMMER	CITY	6 months+
IBM MVS	SYSTEMS PROGRAMMER	CITY	3 months+
IBM COBOL	PROGRAMMER	SUSSEX	6 months+

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My client is part of a diversified international group with a turnover in excess of £600 million. It is no stranger to the microcomputer market, from stand alone business systems to powerful supermicros. Based on this successful penetration, a new division has been formed to sell multiple IBM PC and Local Area Network configurations into substantial organisations. Using the Group's own IBM mainframe to demonstrate wide area communications is seen as a distinct competitive advantage.

COMMUNICATIONS SPECIALIST
up to £15,000
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A software expert with hardware familiarity, you will provide both pre-sales and post-sales technical support to a small, professional sales team based in the Thames Valley, initially covering Southern England and the Midlands, you will then enter a broad range of proposed wide area communication systems. Training in IBM PC and state-of-the-art Local Area Network technology will be provided where necessary.

IBM mainframe environment and front-end communications experience, including 3720 and 3780, are essential. An ideal background will encompass SNA/SDLC, BSC, and to a lesser extent, Systems 34, 36 or 38. Your brief will involve liaison at board level, so we will be looking for a mature approach, combined with effective presentation and demonstration skills.

This is a key appointment within a leading edge team, and career prospects are genuinely outstanding for the successful candidate when a national branch network is established. An attractive negotiable salary will be complemented by large company benefits. Ref. W1720.

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We are also looking for hungry, achievement orientated sales people with the confidence and credibility to make major deals in the multi-user, multi-function market involving configurations from £20K to £100K.

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OPPORTUNITIES IN THE SOUTH

HEWLETT PACKARD – SENIOR
c.£14,000
My client can offer a challenging job with excellent potential if you have over 7 years' D.P. experience, a sound knowledge of HP3000, and an independent personality with a desire to succeed. Based in London they are about to embark on many new development projects due to major company expansion. There are excellent prospects to become involved in analysis and project leading. Experience of FORTRAN, QUIZ, QUICK or CUBE would be useful but are not essential. An excellent salary of £14,000 is offered – this could be increased for the right person! RBF. HW/1010

MOVE INTO ANALYSIS – RSTS/E
TO £11,000
This is an excellent opportunity for a Programmer/Analyst to become more involved in systems design. You must be ambitious and display a thorough knowledge of DEC/PDP, RSTS/E and BASIC+. The company has a lot of development work to be completed at the moment, covering all aspects of commercial applications. Lots of prospects for advancement. Based in the City. RBF. HW/4115

DEC – BANKING £ FIVE FIGURES
If you are currently n DEC Analyst/Programmer, with BASIC+ /+2 experience, preferably with a knowledge of banking – my London based client would like to meet you. They offer the chance to work on the latest DEC/VAX VMS machines, become involved in banking systems and also occasional world-wide travel. They offer an above average salary, combined with free BUPA, STL, to 5 weeks' holiday and excellent profit share scheme. Too good to be true – call me now for more details. RBF. HW/2707

HEWLETT PACKARD – COBOL/SPL
TO £9,000
Programmers and Analysts/Programmers are required by this expanding bureau organisation on the Bedfordshire borders. You will become involved in developing commercial and financial applications to an extremely high standard, whilst expanding your skills. You must have a minimum of 6 months' HP3000 experience using COBOL, and/or SPL. Prospects are excellent. REF. HW/2711

ANALYST/PROGRAMMERS – DIBOL
£11,000
This well-known development organisation based on the Surrey/Berks borders has a requirement for an Analyst/Programmer with either DEC PDP/VAX or Systime experience to work on their new VAX systems. You must display a sound knowledge of DIBOL and be interested in moving into analysis, dealing with users, etc. I also have similar posts in London and East Surrey areas. REF. HW/2997

COBOL PROGRAMMER/ANALYST
SURREY **£11,000**
My client, one of the UK's largest and most successful trading groups, are entering a very exciting stage in the development of their computing facilities. For Programmers/Analysts with sound COBOL skills the opportunities are exceptional involving projects from initiation to implementation. Experience of thorough large systems is desirable with a minimum of 2 years' programming background and the potential to progress within the company. Flexitime, free lunch sports and social facilities are just some of the benefits plus excellent working environment. RBF. MW/4241

SYSTEMS ANALYST/DESIGNER
SURREY **TO £12,000**
If you have a minimum of 2 years' analysis, preferably within a commercial environment and are looking to develop your skills, my client would like to hear from you. You must be able to work alone or as part of a team, and have designed and implemented at least one real time system through from the feasibility stage. The company offer an excellent package and re-location expenses for the right applicant. RBF. EW/4191

TRAVEL COMPANY MIDDLESEX
£9,500
Interesting opportunity for FORTRAN Programmer to develop your skills in an on-line environment dealing with reservation and travel applications. Initially you will work as a member of a small team and every opportunity for advancement will be available within this expanding D.P. department. The company utilises Perkin Elmer equipment and experience of this machine would be desirable. Benefits include free flights. Ref. MW/4246

WANG SURREY/LONDON
TO £10,500
Well-established software house currently recruiting for versatile COBOL programmer with a minimum of 18 months' experience on interactive systems. They use various minis including WANG VS. This company in return offers interesting development work on various projects. Friendly environment and lots of prospects for self-motivated individuals. REF. MW/4244

DATAPOINT LONDON £9,500
An interesting opportunity has arisen with this major oil company for a Datapoint Programmer with good Database skills. Career opportunities within the group are excellent and they offer a full range of benefits commensurate with a prosperous organisation, plus the chance to eventually train on IBM kit. REF. MW/4245

COBOL PROGRAMMER
LONDON **£8-10,000**
An opportunity has arisen for an ambitious programmer to join a prosperous multinational organisation based in Central London. They require a minimum of 18 months' recent experience using any structured COBOL, knowledge of the UNIVAC 1100 being especially welcome. Just one of the many benefits in joining this company are the 1st class career prospects and training. If you are educated to graduate level and you are now looking for career advancement within a professional environment contact us now for further details. REF. MW/2744

NCR ANALYST/PROGRAMMER
MIDDLESEX **£11,000**
This large retail company require an experienced Database Programmer, with excellent analytical skills. The essential requirement is for someone with 2 years + NCR COBOL preferably with accounts experience. This is an interesting and challenging position with lots of user liaison, so good communication skills are essential. The company offer excellent career prospects and plenty of development projects in the future. REF. EW/4184

ICL PROGRAMMER/MOVE INTO ANALYSIS
SURREY **£9,000**
This large household retail company is seeking a number of additional D.P. staff. If you can offer either 18 months' structured programming with a knowledge of TOTAL and/or RAMIS or over 2 years in an ICL COBOL environment and wish to move into analysis, this could be the post for you. The company offer the applicant the chance to work on a number of different mainframes and plenty of scope to advance to your career. REF. EW/4233

HONEYWELL PROGRAMMERS
£9,000
Excellent opportunity for a successful COBOL Programmer to work on new development projects, in a lively environment. Can you offer 2 years' COBOL at a Honeywell L64 site with TDS and on-line experience? Then I am sure you would benefit from a move to this prestigious company, who offer good promotion prospects and mortgage subsidy, life assurance and profit share scheme. REF. EW/2839

ICL ME29 PROGRAMMER c.£8,000
I have two companies based in N.W. London offering an ambitious and keen young COBOL Programmer the opportunity to develop their skills. The successful applicant will have a minimum of 18 months' structured COBOL programming background, with either TMS or TPS on-line experience. The D.P. Department is fairly small but the company is experiencing excellent growth and is seeking a responsible individual to be in at the start. Company benefits include holiday discounts and excellent career prospects. REF. EW/4227

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Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
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[7568]
COMPUTER PERSONNEL CONSULTANTS

IBM OPPORTUNITIES

IBM PROGRAMMER ESSEX
TO £9,000 (+ OVERTIME)
A finance company in Essex urgently needs an IBM COBOL Programmer with 18 months+ DOS/VSE or MVS experience. Knowledge of CICS, OL/1 or IMS an advantage for development and support work. The many company benefits include mortgage subsidy, free life assurance and BUPA. REF. AW/4201

RPG II/SYSTEM 34 & 36
TO £14,000 (+ BENEFITS)
Dynamic software house is looking for imp-class RPG II Analyst/Programmers and Consultants, with a minimum of two and a half years' experience on System 34/36. You will have a choice of working in-house at their Middlesex offices, or on client sites throughout London and the West. At Consultant level, you must be able to assess client's business requirements and develop bespoke systems or tailor packages. Fabulous benefits including Co. Car at all levels. REF. CW/4238

OL/1 PROGRAMMER TO £12,000
Prestigious Central London site utilising twin IBM 4300s under DOS/VSE has a vacancy to fill. Three years + IBM COBOL with DL/1 is essential, whilst CICS would be an advantage. You will be responsible for guiding the team in the technical aspects of DL/1, and developing a range of exciting systems including Point of Sale. Benefits include discount on products, profit sharing scheme and restaurant. REF. CW/4234

IBM SYSTEM 38 CITY TO £13,000
Exciting opportunity to get in at the start of a new IBM System 38 installation. Leading City brokers are seeking an Analyst/Programmer with a minimum of 3 years' RPG III or RPG II to take a senior role in the design and development of bespoke financial systems. A degree or equivalent would be advantageous, and the ability to liaise confidently with users. Benefits include BUPA and life insurance. REF. CW/2792

ANALYST/PROGRAMMER £14,000
My client is a new installation situated in West London running an IBM 4331, with DOS/VSE, CICS. They are seeking a competent Analyst/Programmer with 4 years+ IBM COBOL, and the ability to develop your analysis skills to the full. Any knowledge of RPG, CICS or financial applications would be highly advantageous. Benefits include 5 weeks' holiday and season ticket loan. REF. EW/4197

IBM PROGRAMMER CITY
TO £11,000
A City-based financial institution is looking to recruit a programmer with 2 years' IBM COBOL, DOS/VSE experience. Knowledge of CICS and DL/I would be highly advantageous. A high basic salary is offered along with mortgage subsidy, BUPA, LVs and Co Pension Scheme. REF. AW/4134

IBM ANALYST/PROGRAMMERS
HERTS **TO £10,000**
We need several Analyst/Programmers with design experience to work in a manufacturing environment in Herts. Minimum of 1 year's experience of IBM COBOL, MVS or DOS/VSE, CICS or DL/I. Excellent benefits. REF. AW/4199

RPG III PROGRAMMER TO £9,500
Programmer required to join a small friendly team developing insurance and financial applications. Six months to 2 years' RPG III/System 38 experience preferred, but RPG II people will be considered, benefits include life insurance, LVs, 4 weeks' holiday. REF. AW/4211

SYSTEM 34/36
ANALYST/PROGRAMMER £13,000
Opportunity for IBM system 34/36 RPG II person to develop analytical skills working for international financial institution in London. Great promotional prospects with the opportunity to travel and work abroad or re-locate in England if desired. All the usual perks of a large organisation. REF. AW/4103

BANKING CITY c.£11,000
This leading international Bank in the City requires IBM System 34/RPG II Analyst Programmers for their 1984 expansion plans. Ideally the candidates should have a minimum of 2 years' RPG II experience on IBM kit, financial or banking background would be an added advantage. Full range of banking benefits apply including a subsidised mortgage. REF. GW/1509

S.W. LONDON/SURREY BORDERS
IBM £10,000-£12,000
Excellent opportunity for successful IBM COBOL Programmers and Analysts/Programmers to join this dynamic software house. The company specialise in the area of conversion and development work on IBM 4300s. MVS or DOS/VSE experience is required with either on-line or Database experience. Excellent career path for keen ambitious O.P. professionals. REF. GW/1733

SYSTEMS PROGRAMMER CITY
£13,500 + MORTGAGE
My client (a major international bank) requires a Systems Programmer to join a software support group embarking on major C.P.U. upgrades and DOS to MVS conversion. The ideal candidate will have at least 2 years' systems programming experience and will have worked in an MVS/SP environment. Knowledge of DOS/VSE and VM/CMS would be an advantage. Benefits include non-contributory pension scheme, cheap loans and mortgage subsidy. REF. GW/2220

IBM SYSTEM 38 ESSEX TO £11,500
A new O.S.D. site based in Essex are seeking to recruit Programmers and Analysts/Programmers with a minimum of 12 months' IBM System 38 RPG III experience. This is an international company with expanding offices within the UK. You will be involved with the development of major on-line systems. For the Analysts/Programmers positions, technical design experience is required. Interested? If so please telephone me to discuss these positions. REF. GW/4018

PROGRAMMER/ANALYST
WEST END c.£10,500
A genuine opportunity has arisen to become part of a challenging development team within this multi-national petroleum organisation situated in the West End. They require a programmer/analyst with IBM COBOL and MVS/JES2 background, CICS preferred although not essential. The company currently retain 2 × IBM 4341s but will be upgrading in the not too distant future. Working conditions and company benefits are excellent. REF. GW/4135

SENIOR SYSTEMS PROGRAMMER
£16,000
Central London based engineering and construction firm needs a Senior Systems Programmer with a minimum of 4 years' experience. Applicants should have 2 years + MVS, JES2, IBM 3033. If you enjoy a challenge, give me a ring. REF. GW/4196

These positions are just a brief selection from our extensive database of jobs in London and the South-East. If you cannot see a position advertised for your particular skills, or are considering re-locating or a change of hardware, a quick 'phone call will put you in touch with a consultant specialising in your field. 70% of jobs in this industry are never advertised. Why not let us tell you about some of them? We look forward to hearing from you.

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Computer professionals are required to join the present experienced and highly motivated team based in Maidenhead. The staff likely to be selected will have a minimum of two years' experience in one or more of the following areas – Micro Computers, 'Unix', Programming in 'C' or Zilog Assembler, Communications Software, Terminal Systems or Airline Reservations.

Vacancies exist up to Team Leader/Senior Analyst level. Highly competitive salaries are offered and company benefits include free private medical insurance, life assurance, pension scheme, special holiday discounts, luncheon vouchers and 22 days' annual leave.

Please apply enclosing detailed cv to:

Mrs J. L. Drake, Personnel Officer
TRAVICOM
13 Hermitage Parade, High Street, Ascot SL5 7HE
or telephone Ascot (0990) 20175 for further information

(7658)

OPERATORS

IBM SYSTEM 38 (34) OPS. £8,000+

NORTH LONDON – Due to expension this large well-known company is currently seeking two IBM System 38 Operators; System 34 experience is advantageous. This installation utilizing IBM System 34 and 38 front ended by Series 1 are eiming to strengthen their existing operations team. Applicants should have the ability to work unsupervised to a tight schedule, with meturity and initiative. In return, you will enjoy job satisfaction through technical involvement in this busy, up-to-date environment. Compeny benefits include BUPA, pension scheme, subsidised resteurant, bonus scheme and generous holidys. REF. A/148

SYSTEM 34/38 OPERATIONS SUPERVISOR £HIGH

NORTH LONDON – This large, well-known compeny is currently seeking an experienced Operations Supervisor who enjoys a challenging "up-to-date" environment. IBM System 34 or 38 experience plus proven supervisory skills coupled with the ebility to work under pressure with competence end skill ere essential. Successful applicants will enjoy job satisfaction through technical involvement and the opportunity to exercise supervieory skills in this rapidly expanding instelletion. Company benefits include BUPA, pension scheme, subsidised resteurant, bonus scheme, generous holidays etc. REF. A/141

VM/DOS OPS £8-9,000

We are currently seeking Operators with six months + experience of VM DOS/VSE for various clients in London end the Home Counties. Please cell the numbers below for more information. REF. W/GEN 1

For more information on the above vacancies please call 01-637 1586 after 6 p.m. or on the numbers below during office hours.

(7659)

Ceda

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- ★ **WANG – COBOL or PL/1 Programmers**

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3 months+Feb. start. IBM.PL/1 & CICS.
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Intel, VAX – PLM. ASS, BASIC, CORAL or FORTRAN – Real Time Experience.

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3 months+Feb/Mar start. DEC, PDP RSTS/RSX
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DATA BASE CONSULTANT/DESIGNER
6 mths.+Feb/Mar start. IDMS VSAM
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12 mths. + Feb./Mar. start.

VAX OPERATIONS TRAINING INSTRUCTOR
12 mths. + Feb./Mar. start.

WANG H/W & S/W INSTALLER/SUPPORT SPECIALIST
12 mths. + Feb./Mar. start.

IBM PROGRAMMERS & ANALYSTS
12 mths. + Feb.-Apr. start. PLI, IMS, TSO/SPF experience.

For more details on the above and other scheduled assignments ring Bill NOW on 01-844-1722 or write enclosing detailed c.v.

(7662)

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We are seeking an individual with the character and personality to assume responsibility at an early stage and to successfully liaise with users throughout the Company. Ideally you should possess Hewlett Packard experience and have followed a career path that encompasses either manufacturing or engineering environments and associated systems. Obviously, experience of **Database, COBOL,** and **MRP** would be highly advantageous. Candidates who feel that they have the required background, though perhaps developed on alternative systems, are still encouraged to apply.

Our growth could be the opportunity you have been seeking, to join a developing systems environment, which will lead to career progresaion over a suitable period. Employment benefits, including relocation assistance where applicable, match the position and Company.

Candidates should apply by telephoning **Brian Harris** on **021-236 3781** (24-hour answering service) or on **0788 77732** (evenings and weekends until 9pm).

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(7814)

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PUBLIC SECTOR APPOINTMENTS

SOUTH NORFOLK DISTRICT COUNCIL

Post A Programmer/Analyst
Scale 6/SO1 (£8,154 to £9,660 p.a.)

Post B Programmer (Temporary)
(For period of 18 months)
Scale 5/6 (£7,191 to £8,712)

Due to the development of our computer services we have vacancies for experienced Cobol programmers for an ambitious programme of developing on-line and batch systems for the ME29/45 computer and the development of other equipment, including ICL DRS 20/50 micros.

All applicants should have a good academic background and personal qualities will include the ability to work to demanding timescales.

Experience of RPG2, TME-TP, communications, IDMS and/or DOS will be advantageous.

Appropriate training will be provided where necessary.

The posts are based at the modern, open plan Council offices at Long Stratton where working conditions include flexible working hours, staff restaurant and BUPA membership at reduced fees.

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Application forms, together with further details (please state the post for which you wish to apply) are obtainable from:

Management Services and Personnel Officer, South Norfolk District Council, South Norfolk House, Swan Lane, Long Stratton, Norwich NR15 2XE (Tel: Long Stratton (0508) 31122).

Closing date for applications – Friday, February 17th, 1984.

(7673)

GLC Working for London

Computer Applications Manager

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The Manager's role includes establishing forward organisational and resource requirements for the Department, carrying out appraisals and feasibility studies and providing technical input to reports. This post also carries responsibility for new technology applications and developments and will involve close liaison with the Central Computer Service.

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For an application form, to be returned by 17th February 1984, write to: Establishment Division, Department of Architecture and Civic Design, Ref: 0117, Greater London Council, Room 469 North Block, The County Hall, SE1 7PB or telephone 01-633 2147.

The GLC welcomes applicants from all sections of the community, irrespective of their sex, ethnic origin, colour, sexual orientation or disability, if they have the necessary attributes to do the job.

The GLC is an equal opportunities employer

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You should have considerable technical expertise and applications are particularly welcome from those with experience of our equipment and software, but we require a minimum of 18 months' operations experience. Preference will be given to those with supervisory skills or experience.

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Closing date 17th February. (7649)

Borough of Brighton

RICHMOND UPON THAMES COLLEGE

Egerton Road, Twickenham, Middlesex

TUTOR ANALYST/PROGRAMMER

Lecturer Scale I

Richmond upon Thames College has acquired an extensive range of computer hardware to provide an educational computer service to students and staff. This includes a PDP11 minicomputer plus many microcomputers. To expand our service we have created the above additional post for the Computer Unit.

Applications are invited from persons with a solid computing background who are enthusiastic about combining practical computing with advising staff and teaching Computer Literacy. Although a teaching qualification is desirable it is not essential as teacher training can be provided.

Successful candidates must be willing to act as Collegium-tutors, teaching up to two hours of the tutorial curriculum weekly for mixed tutor groups.

Salary Scale:
£6,649-£9,735
plus £646 Outer London Weighting Allowance per annum

Further particulars and application forms, returnable within two weeks of the date of this advertisement, may be obtained from the Administrative Assistant, Personnel Section, Richmond upon Thames College, Egerton Road, Twickenham TW2 7SJ. (Foolscap self-addressed envelopes only).

LONDON BOROUGH OF RICHMOND UPON THAMES

(7630)

London Borough of Ealing

APPLICATIONS PROGRAMMER

Ealing College of Higher Education
St. Mary's Road, Ealing W5
£7,818-£8,620 pa inclusive

Required to join a team of two other programmers in providing a range of services to academic and administrative users. The centre provides an interactive computing service on Prime 750/550 as well as facilities on BBC and North Star micro computers.

Applicants should have a relevant degree and at least two years' practical experience, and preferably a good working knowledge of statistics.

Please quote reference ED888.

Closing date 17/2/84.

Application forms and further details from the Chief Administrative Officer (TD/UC), E.C.H.E., St. Mary's Road, London W5 5RF. Telephone: 01 579 4111.

(7647)

POLICE COMPUTING – MANCHESTER

up to £11,703

Greater Manchester Police is one of the largest Forces in the country with a comprehensive programme of computerisation.

The Force is currently installing a major computer system based on Tandem hardware incorporating criminal records, message switching and an associated data network linking Headquarters to divisions and sub-divisions.

The Force is also in the process of installing, developing or planning a number of other administrative and operational systems.

To play an important role in these developments there are a number of posts:

SYSTEMS ANALYST	**P01/2**
ANALYST/PROGRAMMER	**P01**
PROGRAMMER	**S01/2**

Salaries within the range £9,060-£11,703.

The Systems Analyst will work on departmental management systems. Experience of mini and microcomputer systems is desirable and implementation experience must be demonstrable. About six years' D.P. experience is required.

The Analyst/Programmer will work on operational systems. You should have experience of large databases using fast response on-line systems, together with about four years' D.P. experience.

The Programmer will assist the above posts. Experience of a commercial language is essential and the use of a microcomputer language would be desirable.

The posts, although on the County Treasurer's establishment, are within the Police Computer Projects Branch which is based at Force Headquarters in Trafford, Manchester. For an informal discussion phone Andy Softley, Project Leader, on 061-872 5050 extn. 2782.

Application form, job description and further details available from the County Treasurer, Greater Manchester Council, Piccadilly Gardens, Manchester M60 3HR.

Closing date 15th February 1984.

(7546)

LEICESTER POLYTECHNIC

Posts in Information Technology

Leicester Polytechnic is one of a select group of Polytechnics leading the development of innovative courses in Information Technology, defined as a new amalgam of computing and communications systems.

PRINCIPAL LECTURER Post 310
Salary Scale: £12,619-£13,938 (bar) - £15,744 per annum
This key post offers an excellent opportunity to lead developments from Higher Technician level up to Masters Degree level in an area of Information Technology appropriate to the candidate's interests.
A degree in Engineering/Science/Computer Science/Mathematics, together with suitable research or industrial IT experience is appropriate. We are looking for someone to develop our interests in computer networks, data communications, office systems, open systems or any other aspect of IT applications.

LECTURER II Communications Systems Post 98
Salary Scale: £7,218-£11,668 per annum
This post offers a young graduate with some industrial or commercial experience an opportunity to develop a teaching talent while maintaining good links with industry. Experience in one or several of the following aspects of IT are appropriate: PCM, System X, Satellite Systems, Optical Systems, Microelectronics for Communication Systems, Data Transmission, Data Switching and Computer Communications, Computer Network Design, Operation and Testing, Social and Management Implications of IT.

Application forms and further details from The Personnel Office, Leicester Polytechnic, P.O. Box 143, Leicester LE1 9BH. Telephone: Leicester (0533) 551551, ext. 2303.

(7641)

SHEFFIELD CITY POLYTECHNIC

COMPUTER SERVICES DEPARTMENT

PROGRAMMER (SYSTEMS PROGRAMMING SECTION)

Sc5/6 £7,191-£8,712

A Programmer is needed to work as a member of a team responsible for operating system support on the IBM 4341 under VM/CMS. The team is also involved in support of microcomputer systems software and data communications.

Applicants should have previous systems support experience, including IBM 370 Assembler language programming, and should preferably have a degree level qualification.

APPLICATION FORMS AND FURTHER DETAILS FROM THE PERSONNEL DEPARTMENT, SHEFFIELD CITY POLYTECHNIC, HALFORDS HOUSE, 14 FITZALAN SQUARE, SHEFFIELD S1 2BB. TEL. 0742 20911, EXT. 2351. PLEASE QUOTE POST NO. 69/83. CLOSING DATE FEBRUARY 14th.

Sheffield City Polytechnic is an equal opportunities employer.

(7648)

HALTON BOROUGH COUNCIL

Chief Finance Officers Dept Post Number 67

Operations and Network Controller

Grade SO 1/2 – £9,060 – £10,539

Applications are invited for the above position which is based in the municipal building, Widnes.

It is a new post, reporting and responsible to the Computer Manager. For the satisfactory scheduling and organisation of the entire operations side of the computer installation, including mainframe, Data control and terminal network. The Council provides a service not only to its own departments but also to Warrington and Runcorn Development Corporation.

The Council has recently installed an ME 29 model 54 computer, supporting a considerable terminal network at several locations.

Several years experience in a Computer Operations Department is required, preferably on ICL ME 29 equipment. A sound knowledge of hardware, software and communications is essential, while experience of the management and control of staff is desirable.

Application forms and job descriptions may be obtained from the Head of Personnel and Management Services (Tel: 051-424 2061, ext. 1481 and should be returned no later than 17th February, 1984.

(7631)

Newcastle upon Tyne Polytechnic

COMPUTER UNIT

PROGRAMMER/ANALYST (Scale 5/6)

Ref. No: APC 5/84

To design, specify and implement computer programs and packages across a wide range of applications. Candidates will be assessed on a combination of a degree, professional qualification and relevant experience.

NJC Salary and Conditions £7,181-£8,712 per annum.

For further details and application forms please call our 24 hour telephone answering service (0632 323128) or write enclosing a stamped addressed foolscap envelope to Mrs Rosemary Smith, Administrative Assistant (Recruitment), Newcastle upon Tyne Polytechnic, Ellison Place, Newcastle upon Tyne NE1 8ST, to whom completed forms should be returned quoting the reference number by February 17th, 1984.

(7646)

UNIVERSITY OF LIVERPOOL

Department of Computer Science

EXPERIMENTAL OFFICER

to join small team which provides software and/or hardware support for teaching and research. Experience of local area networks, assembly language programming, UNIX, Algol 68, or Pascal particularly welcome.

Candidates should possess an Honours degree in Computer Science, or have appropriate equivalent professional qualifications.

Salary within range £6,310-£8,530 per annum.

Application forms may be obtained from the Registrar, the University, P.O. Box 147, Liverpool L69 3BX. Quote Ref: RV/216/CW.

(7632)

West Midlands Regional Health Authority

NHS COMPUTING – PROJECT LEADERS

Grade: Scale 14

Salary £9,484-£11,434 (new entrants to the NHS normally commence on the minimum of the salary scale)

The Management Services Division of the West Midlands Regional Health Authority is responsible for many computing projects both within the Region and nationally, using ICL mainframe computers and a wide variety of mini and micro computers.

These projects require skilled professional project leaders who are capable of controlling teams of analysts and programmers who have the ability to plan and execute high quality work and liaise directly with different client groups within the NHS.

Vacancies have arisen for such staff, based in Birmingham. If you feel that your career has led you to the position where you can handle real responsibility, please send now for an application form from: West Midlands Regional Health Authority, Personnel Division, 1st floor, Cumberland House, 200 Broad Street, Birmingham B15 1SW. Tel: 021-643 5781, ext. 41.

Closing date for receipt of completed applications, February 23rd, 1984

(7638)

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(01) 661 8080

CROSSWORD

Prize Crossword No 49

Compiled by Alec Robins

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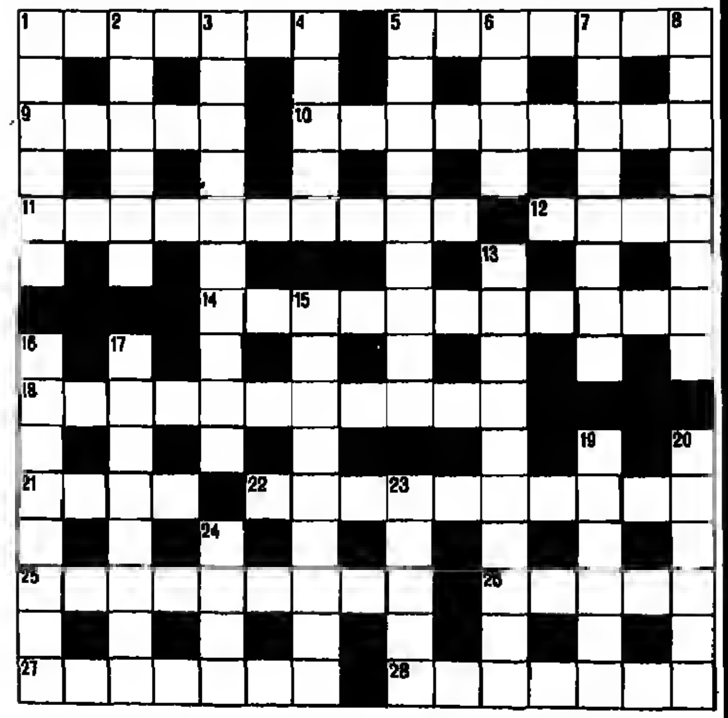

Name...(Miss, Mrs, Ms, Mr)

Address...

....

Telephone...

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed .... Date..............................

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Earn between £10K and £14K Basic + O.T. + Standby
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Field Service Engineers with a good knowledge of minis/mainframes are offered the opportunity to work for this world-leading manufacturer of non-stop processing minicomputer equipment.

INTERESTED IN CAD/CAM?
Basic Salaries to £11K + 2-litre car + all benefits

Substantial growth (60% p.a.) has now created a number of vacancies throughout the UK. Our client can proudly boast that they are the world leaders in the manufacture of CAD/CAM mini computer systems.

JUST STARTING OUT?
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Would you like the opportunity to get your foot in the door of the computer Industry? Our Client, a major micro manufacturer can give you the key.

Phone JACKIE WOOD on 01-543 4844 days or 0403-68689 Eves/weekends

ALLTRONICS PEOPLE (AGY)

(7687)

PROGRAMMING PROFESSIONALS

LSI Logic Limited (a leader in the design and manufacture of custom and semi-custom integrated circuits) has established a design centre and development laboratory in Bracknell. There are immediate openings for qualified professionals seeking a career in state of the art software development.

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If you have the qualifications for these positions, please send your résumé to:

Svein Davidsen, General Manager
LSI LOGIC LIMITED
Grenville Place, The Ring
Bracknell, Barks RG12 1BP

(7653)

DIRECT MUMPS CONTRACTS

West End travel company require Mumps Contract Programmers to work at their offices in London W8.

– BEST RATES AVAILABLE –

Applicants must have experience of DSM-11.

For more details contact Colin Jardine on 01-229 6300 NOW.

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ROTHERHAM METROPOLITAN COUNCIL

Rother Valley College of Further Education
Doe Quarry Lane, Dinnington, Nr Sheffield (tel. Worksop 569691)

Required for 1st May, 1984.

L.II IN COMPUTER STUDIES (£7,215 – £11,568 pa)

A graduate for LII in Computer Studies post. Industrial, research or academic experience in Computing required, particularly in high level programming, methodology, applications programming and systems software/hardware. Courses range from BTEC Higher Certificate to computer literacy. The successful applicant will have some senior responsibility in a busy section.

Closing Date: 14th February, 1984.

Curriculum Vitae and details of two persons for reference to the Principal of the College at the above address.

W. S. Mussett
Director of Personnel
Resources

(7661)

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Whether you're an established contractor already, or contemplating going contract for the first time, the excellent salary rates are an obvious attraction. However, we at Lorien believe there are many other good reasons for going contract – the right reasons. Many of our contractors have been with us for several years, and with good reason. Our large blue chip client base can provide a high level of security, tremendous variety and ensure that technically you keep abreast of advances within the industry – and our highly experienced consultants match your skills to the right contract.

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PROGRAMMERS COBOL, DME, IDMS ALL AREAS
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Telephone Nick Clements

We have many contract requirements suitable for first time or experienced contractors. These are located throughout the South of England, including London, with immediate and future start dates. Our consultants will be delighted to discuss these exciting prospects with you.

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SMR

Sales & Marketing Recruiters Ltd

Leaders in High Technology Recruitment

MICROCOMPUTERS
SALES AND SALES SUPPORT

THIS COULD BE THE START OF SOMETHING BIG!

Probably the most sought after job opportunities as far as accomplished and ambitious salespeople are concerned is the chance to join a major foreign company with an outstanding product range who is just setting-up in the U.K. The implications of the 'ground floor opportunity' are obvious. However it is not very often that such a situation occurs involving a multi-national company with revenues in excess of £500 millions and employing over 25,000 people worldwide!

So determined is our client to succeed, that the investment in U.K. manufacturing facilities has trebled within the last two years. Early success has already been achieved and the product/quality performance may be judged by its rapid revenue growth.

This company is about to launch a powerful range of home and business microcomputers with performance and prices that will amaze you, supported by application packages and a comprehensive range of languages, system utilities and operating software.

Requirements now exist

THROUGHOUT THE U.K.

AREA SALES MANAGERS

Candidates should be directly experienced and successful salespeople who are currently selling microcomputers to Dealers, Distributors, Specialist Computer Retailers, Major End-Users, etc. They will be self-motivated and industrious individuals, able to create and implement sales strategy and manage a small team of sales and technical support people. An attractive compensation package will be offered including a guarantee against commission earnings and a company car is provided. Territories are available throughout the U.K.

SALES SUPPORT ANALYSTS

Candidates should have substantial experience of either the business or home microcomputer market and able to handle the technical requirements of distributors, retailers and large-scale end-users. Knowledge of CPM and BASIC is essential and fluency in commercial applications will be advantageous. Opportunities exist throughout the U.K.; an attractive salary will be paid and a company car is provided.

SALES TRAINEES

These opportunities will appeal to those young people with obvious flair for selling who have significant experience of utilising microcomputers or are already involved in marketing or merchandising to distributors, retailers, etc. The job entails the provision of sales and marketing support, including the operation of varied promotional campaigns to a wide selection of clients and reports to the local Area Sales Manager. Opportunities exist throughout the U.K., an attractive salary will be paid and a company car is provided.

All these excellent job opportunities carry considerable fringe benefits, a company pension, but above all they offer considerable potential for job satisfaction, high earnings and career advancement.

Please provide complete career details to Roger Dodd (Midlands and North) and Lindsay Howie (South) quoting reference SDB/024.

(7624)

LONDON & SOUTH
29 Oxford Street,
London W1. (01) 734 9776

MIDLANDS & NORTH
Cathedral House, Beacon Street,
Lichfield, Staffs. (05432) 56612

Answering Service after 6 pm and weekends
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

SALES BIT

Quality of Management – 81

Know-how is not enough – you need to pass it on

A REGULAR arrival at Sales and Marketing Recruiters is the aspiring sales trainee; young people trying to get into selling.

Many come to us in the hope of getting into the computer industry; others simply due to the frustration of being unable to obtain basic sales training within their own company.

More often than not, we are unable to offer them any direct opportunities of employment, but we are always happy to point them towards those companies which have the resources, commitment and long-standing reputation of providing effective selling training for people who are new to selling.

Among those we normally recommend as having the best understanding of the fundamental needs of such people are British Olivetti, Burroughs, Kalamazoo and Rank Xerox, all of which have for many years provided an excellent breeding ground for computer industry salespeople.

So I was extremely surprised to receive a telephone call the other day from an employee of one of these companies asking if we could provide her with some sales training. Talk about coals to Newcastle!

It transpired that we were discussing a classic sales management shortfall – that is, the lack of acceptance, or realisation that sales training (like recruitment) is a continuing process; that well established and proven salespeople have as great, albeit different, a need as new recruits for training.

Continuous training is a fundamental part of their professional occupation.

For many companies, sales training is something one is obliged to give to trainees and new recruits, and even then it is a task preferably offloaded to an external agency if at all possible.

Continuity and commitment don't come into it. It is treated more like an unavoidable nuisance than an integral and stimulating part of sales management.

The caller explained that she was selling an excellent and highly technical product for a first-class company with which she had been employed for many years and where she was happy to continue. The only problem was that for its established salespeople replenishment sales training was non-existent, and competition and product-related training occurred only when it could not be put off any longer.

This she found not only demotivating, but a considerable handicap within a competitive marketplace.

This prompted me to return to the subject of training, having spent some time in discussing the merits of field training.

Few sales managers have the good fortune and experience of setting up a sales team from scratch. More often than not they take over a legacy of management neglect and inadequacy. Occasionally some get lucky and take over from a sales manager who has left in order to continue his climb to further stardom, leaving behind him a well-trained, highly motivated and disciplined team.

Much more likely, however, is that the manager departed because the managing director thought it might be a good idea.

So there you are, with your motley crew, 'til head-hunter or size 10 boot do you part. So what comes next?

For a start you need to make sure everybody in the team is singing from the same hymn book. Everyone must have a clear understanding of the marketplace, the product, the competition and above all the way your particular product should be sold relative to the personality of the individual.

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The next problem is how to go about it.

Whether you use an external agency or do it yourself, is not as important as establishing what kind of training is needed and accepting the commitment to do it.

This training should be relevant, not only now, but on a continuing basis for the foreseeable future.

In other words, don't merely think about the training that is required now. Consider also what will be needed throughout the coming year.

In the educational process, merely having the information is not sufficient in itself. Knowing how to convey it to others is what really counts.

Teaching is a very special skill that should not be underrated but respected.

The principal areas of training for salespeople are product knowledge, selling skills, knowing the competition, and knowing the customer.

Next week I would like to continue by highlighting some of the primary considerations related to these key areas, as they apply to the growth of the individual salesperson.

Alan Williams

PUZZLE ANSWER

IT is clear that whichever man served first he could not have won all five of his service games, since this would allow for no "breaks" by his opponent. So it is fair to assume that the first server won only n of his service games – and fair also to say that he must have won some (say m) of the other four games. This gives a total of $(5-n)+m$ for the number of games lost by both servers together. But this total is known to equal 5, so n must actually equal m. The inference therefore is that the first server must have won an even number of games, and so it must have been X who served first.

CROSSWORD

Prize Crossword No 49

Compiled by Alec Robins

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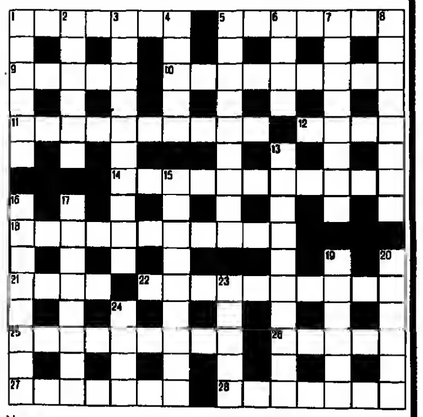

Name ..... (Miss, Mrs, Ms, Mr)

Address .....

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Telephone .....

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LSI LOGIC LIMITED
Grenville Place, The Ring
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SALES TRAINEES

These opportunities will appeal to those young people with obvious flair for selling who have significant experience of utilising microcomputers or are already involved in marketing or merchandising to distributors, retailers, etc. The job entails the provision of sales and marketing support, including the operation of varied promotional campaigns to a wide selection of clients and reports to the local Area Sales Manager. Opportunities exist **throughout the U.K.,** an attractive salary will be paid and **a company car is provided.**

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SALES BIT

Quality of Management – 81

Know-how is not enough – you need to pass it on

A REGULAR arrival at Sales and Marketing Recruiters is the aspiring sales trainee; young people trying to get into selling.

Many come to us in the hope of getting into the computer industry; others simply due to the frustration of being unable to obtain basic sales training within their own company.

More often than not, we are unable to offer them any direct opportunities of employment, but we are always happy to point them towards those companies which have the resources, commitment and long-standing reputation of providing effective selling training for people who are new to selling.

Among those we normally recommend as having the best understanding of the fundamental needs of such people are British Olivetti, Burroughs, Kalamazoo and Rank Xerox, all of which have for many years provided an excellent breeding ground for computer industry salespeople.

So I was extremely surprised to receive a telephone call the other day from an employee of one of these companies asking if we could provide her with some sales training. Talk about coals to Newcastle!

It transpired that we were discussing a classic sales management shortfall – that is, the lack of acceptance, or realisation that sales training (like recruitment) is a continuing process; that well established and proven salespeople have as great, albeit different, a need as new recruits for training.

Continuous training is a fundamental part of their professional occupation.

For many companies, sales training is something one is obliged to give to trainees and new recruits, and even then it is a task preferably offloaded to an external agency if at all possible.

Continuity and commitment don't come into it. It is treated more like an unavoidable nuisance than an integral and stimulating part of sales management.

The caller explained that she was selling an excellent and highly technical product for a first-class company with which she had been employed for many years and where she was happy to continue. The only problem was that for its established salespeople replenishment sales training was non-existent, and competition and product-related training occurred only when it could not be put off any longer.

This she found not only demotivating, but a considerable handicap within a competitive marketplace.

This prompted me to return to the subject of training, having spent some time in discussing the merits of field training.

Few sales managers have the good fortune and experience of setting up a sales team from scratch. More often than not they take over a legacy of management neglect and inadequacy. Occasionally some get lucky and take over from a sales manager who has left in order to continue his climb to further stardom, leaving behind him a well-trained, highly motivated and disciplined team.

Much more likely, however, is that the manager departed because the managing director thought it might be a good idea.

So there you are, with your motley crew, 'til head-hunter or size 10 boot do you part. So what comes next?

For a start you need to make sure everybody in the team is singing from the same hymn book. Everyone must have a clear understanding of the marketplace, the product, the competition and above all the way your particular product should be sold relative to the personality of the individual.

The next problem is how to go about it.

Whether you use an external agency or do it yourself, is not as important as establishing what kind of training is needed and accepting the commitment to do it.

This training should be relevant, not only now, but on a continuing basis for the foreseeable future.

In other words, don't merely think about the training that is required now. Consider also what will be needed throughout the coming year.

In the educational process, merely having the information is not sufficient in itself. Knowing how to convey it to others is what really counts.

Teaching is a very special skill that should not be underrated but respected.

The principal areas of training for salespeople are product knowledge, selling skills, knowing the competition, and knowing the customer.

Next week I would like to continue by highlighting some of the primary considerations related to these key areas, as they apply to the growth of the individual salesperson.

Alan Williams

You need to make sure everyone in the team is singing from the same hymn book. Everyone must have a clear understanding of the marketplace, the product, the competition, and above all the way your particular product should be sold relative to the personality of the individual

PUZZLE ANSWER

IT is clear that whichever man served first he could not have won all five of his service games, since this would allow for no "breaks" by his opponent. So it is fair to assume that the first server won only *n* of his service games – and fair also to say that he must have won some (say *m*) of the other four games. This gives a total of $(5-n)+m$ for the number of games lost by both servers together. But this total is known to equal 5, so *n* must actually equal *m*. The inference therefore is that the first-server must have won an even number of games, and so it must have been X who served first.